BEFORE THE WATER POLLUTION CONTROL ADVISORY COUNCIL (WPCAC)

TRANSCRIPT OF PROCEEDINGS

Heard at Room 111, Metcalf Building
1520 East Sixth Avenue
Helena, Montana
April 14, 2010
10:00 a.m.

CHAIRMAN DUDE TYLER; MEMBERS TREVOR SELCH, EARL SALLEY, MITCHELL LIEU, RICHARD HOEHNE, ROGER MUGGLI, STEVIE NEUMAN, KAREN BUCKIN SANCHEZ; and CORY FISHER and MICHAEL WENDLAND
(By telephone)

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WHEREUPON, the following proceedings were had and testimony taken, to-wit:

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(Mr. Wendland and Mr. Salley not present)

CHAIRMAN TYLER: Call this meeting to order. Good morning, everybody. I wonder if we would be well served by going around ourselves because we have several members in the audience who may be curious. I'm Dude Tyler. I'll be the Chair today, from Livingston. Bob Bukantis is our point man here. Shall we go around.

MR. SELCH: Trevor Selch, fisheries pollution biologist with Fish, Wildlife and Parks.

MS. BUCKIN-SANCHEZ: Karen Sanchez. I represent professional engineers on this committee.

MS. NEUMAN: Stevie Neuman, representing the conservation districts.

MR. MUGGLI: Roger Muggli, representing irrigation. I manage the Tongue and Yellowstone Irrigation, Muggli Brothers Farm and Feed Plant Operation.

MR. HOEHNE: Richard Hoehne, represent public works. I'm with the town of Philipsburg.

MR. LIEU: Mitch Lieu. I'm representing industry discharging organic materials, I believe. Specifically I work for Plum Creek Timber Company.

CHAIRMAN TYLER: Just for our shop keeping here, since we do have a Court Reporter today, Laurie will be taking notes. It would be very handy if all of us could state our name before we raise a point or anything, just for the logistics here. Who do we have on the phone?

MR. FISHER: This is Cory Fisher from Missoula, and I'm representing conservation organization.

CHAIRMAN TYLER: Good morning, Cory. Anybody else?

(No response)

MR. BUKANTIS: Earl is going to show up. He's going to be a little bit late.

CHAIRMAN TYLER: So Earl Salley will be here.

MR. BUKANTIS: He estimated about half an hour late.

CHAIRMAN TYLER: Well, we do have a quorum. Is there any change to the agenda as written? If not, motion to approve the agenda.

MR. LIEU: So moved.

CHAIRMAN TYLER: Second?

MR. SELCH: Second.

CHAIRMAN TYLER: Voice vote, all in favor.

(Response)

CHAIRMAN TYLER: Opposed.

(No response)

CHAIRMAN TYLER: Motion carries. Any changes to the minutes from the January 5th Council meeting?

(No response)

CHAIRMAN TYLER: Motion to approve?

MS. BUCKIN-SANCHEZ: Karen. Motion to approve.

CHAIRMAN TYLER: And second?

MR. SELCH: Trevor. Second.

CHAIRMAN TYLER: Thank you. All in favor.

(Response)

CHAIRMAN TYLER: Opposed.

(No response)

CHAIRMAN TYLER: Motion approved as read. Bob, we're right into action items with Tom. Tom Reid.

(Mr. Salley enters)

MR. SALLEY: Good morning.

MR. REID: I'm just going to review the subchapter rules we're proposing and answer any questions.

My name is Tom Reid, from the Water Protection Bureau, DEQ. And I believe everyone has a copy of the proposed revisions to Subchapter 12 in their packet, or were on the table in the back. And what I'd like to do today is just kind of walk through those briefly and answer any questions that the Council has. We are proposing to take these rules to the Board in May, the May 14th meeting to initiate rulemaking, so we're requesting a Council recommendation on that.

We did come to before the Council back about a year ago and give a brief introduction. We are in the process of updating the MPDES rules, Montana Pollutant Discharge Elimination System rules, to bring them into conformity with 40 CFR 123.25, which are the Federal regulations that prescribe what a state MPDES program must have. Those are minimum requirements to issue permits under the National Pollutant Discharge Elimination System.

We're going to do this in a phased

approach. This is Phase 1. We'll probably have two more, at least two more, probably more like three phases that will come forward to the Board, or to the Council and ultimately the Board.

As we started out, it was a broader package, including both Subchapters 12 and 13. We found out that that was just too much information, so this is focused on Subchapter 12, which establishes minimum treatment requirements in the sense of the Federal Clean Water Act for existing and new source discharges.

We've had these rules adopted by reference in the past. So in this rulemaking, we're clarifying and updating what rules need to be -- Some of those rules that we had incorporated by reference were eliminated from the Federal Clean Water Act and Federal regulations by 1987 amendments to the Federal Clean Water Act and subsequent amendments, so we're trying to bring our rules in line with the Federal rules.

Our Subchapter 12, which is what we're talking about today, is the equivalent of 40 CFR 125, and 40 CFR 125 establishes minimum treatment requirements for national NPDES issued permits, so we're clarifying the title and purpose

of scope to align with those Federal regulations.

In short, Subchapter 12 establishes effluent limitations for existing sources, and effluent limit guidelines which are published by EPA under Section 304 of the Federal Clean Water Act in 40 CFR Subchapter (N), which is a large two volume set, so we incorporate that by reference.

Subchapter 12 also establishes effluent standards and standards of performance for new sources. New sources are any source that proposes to discharge after the promulgation of the Federal New Source Performance Standards. So those are equivalent to 125.3.

And we also in this rulemaking package, which is the first time we've adopted rules for cooling water intake structures, these are facilities that generate electricity for sale. At least 25 percent of the cooling water is used for the purposes of cooling generating facilities, and they're subject to regulation under the Federal Clean Water Act.

We're also establishing and updating our variance procedures for MPDES permits to reflect the current Federal rule, eliminating variances for POTW's, which are no longer recognized under

the Federal Clean Water Act, and in recognizing the three remaining variances for non-POTWs or industrial facilities.

So that's basically an overview of 1203 criterion standards for technology based treatment requirements, so I'll stop at this point and ask if there are any questions on those rules up to this point.

CHAIRMAN TYLER: Board questions?

I heard a rustle on the telephone.

MR. FISHER: Nothing here.

MR. REID: Hearing none, I'll move on to 1206, which are effluent standards for toxic pollutants. Again, these have been incorporated by reference since the 1970s, but we're trying to clarify how they fit and which group of toxic pollutants are being addressed by 1206.

1206, EPA and the Federal Clean Water Act have adopted toxic pollutants twice, and there is two different categories. The first category has to do with the original six toxic pollutants that were adopted in 1977, and that's what's addressed in 1206. In 1977, Federal Congress amended that list of toxic pollutants, 65 different categories, and those all have different

levels of treatment requirements for facilities that manufacture or discharge those pollutants.

Rule 1207 is effluent limits and standards performance for new sources, so that defines and mandates that we apply new source performance standards for new sources. Again, those are defined as sources that discharge after the adoption of the new source performance standards, and there are no variances and compliance schedules that are allowed for new sources.

We're eliminating Sections 1208 and 1209 because they became redundant when we incorporated and updated 1203. 1203 specifies minimum treatment requirements for POTW's and non-POTW's, or industry and commercial dischargers, so there was no need to have --

In the old rules, the old rules, the whole Subchapter 12 was only four pages long, because we adopted everything by reference; but again, it was very confusing to both the regulated community and permit writers, because EPA has a number of requirements that apply only to EPA.

So those Federal requirements, if you go to the Federal rules, get kind of twisted around

because in some cases we're only delegated for three of the five Federal programs. We don't apply rules to the programs that aren't delegated, we're not delegated for, those are administered by EPA, so we have to split through that.

And then there are additional requirements for EPA issued permits, in the sense that any EPA issued permit would have to go through a 401 certification process, and so we want to sort all that stuff out that doesn't apply to us, and really adopt what rules do to apply.

So we have eliminated 1208 and 1209, but we still refer to those sections in other places. So the net effect is we still have effluent limits for hazardous substances and other toxic pollutants.

So those are the basically the changes in the existing rule. The remainder of the rule package addresses the new rules, rules that we have not seen in the State of Montana yet, but are Federal rules; and again under 125, we are required to adopt those.

And the first one, New Rule I, has to do with thermal variances under Section 316(a) of the Federal Clean Water Act, and those are for

discharges from steam generated facilities, that may have to comply with State water quality standards, but can apply for a variance from those standards under 316(a). So that's a variance procedure. We currently don't have any permits for facilities that are subject to 316(a) variances. When we adopted mixing zone rules back in 1990, most of the need for 316(a) variances were eliminated.

So moving on to New Rule II. Now, that's on the effluent side. So far everything we've been talking about applies to effluents for the discharge from regulated facilities. The remainder of the rule package has to do with intake structures and the requirements that would be applied to either new sources -- I should say new facilities. We're changing, using the term "source" to "facilities" -- or existing facilities.

New Rule II establishes technology based requirements for cooling water intake structures. New facilities are defined as any facility that either commences operation or begins construction after January 17th, 2002. That's the date that EPA published their rule, and so that's the date

that's established in Federal rule to split between new and existing facilities. So new facilities are anything that are constructed after January 17th, 2002, and have a cooling water intake structure, and that cooling water is used in steam generation for electrical transmission.

New Rule II requires that these facilities apply the best technology available for minimizing environmental impact. That's a BTA standard. That is different from BBT, BAT, BCT, BDT, and BTA. Those are different levels of requirement under the Federal Clean Water Act, technology based requirements that we have to apply in permits.

New Rule II breaks into three categories these new facilities. New facilities less than two million gallons per day, that standard must be applied by the permit writer on a BPJ basis, best professional judgment. I'm sorry. I'm probably throwing out a lot of acronyms that I haven't defined, but they're all in the rule. So facilities under two MGD are required -- the permit writer must apply best professional judgment.

Facilities over -- and that's based on

BPT, best practical treatment technology, currently available. That's the level of economic analysis that must be applied.

Facilities between two million gallons per day and ten million gallons per day on their intake structure must reduce their intake velocity to less than five feet per second. The whole goal here is to minimize what's called impingement mortality and entrainment mortality. Those are the two things that we look at under these rules.

Impingement mortality is when a fish is impinged on the intake screen. Most cooling water structures use a three-eighths inch traveling screen to keep debris and large objects from getting sucked into the intake structures. That's been the base technology since the 1950s for cooling water intake structures. If you minimize the intake velocity, then you minimize what's being impinged on those intake structures.

Entrainment is the other major factor that we look at in applying PBJ, or any of these criteria. Entrainment is the stuff that goes through the screen and into the facility, and obviously that's smaller stuff. So most of the larger fish are caught on the intake structures,

and the smaller aquatic organisms, fry, eggs, and things, are entrained in the facility; and ultimately when you go through a power plant, usually it results in 100 percent mortality.

So the requirement for facilities again is graded from less than two, two to ten, and then over ten. Facilities over ten MGD, EPA has identified the model technology for these facilities as closed cycle recirculating cooling water system. So facilities over ten MGD, new facilities over ten MGD, must reduce their volume of water to a level commensurate with that type of facility. So that's the requirement.

There are some other requirements. They can't take any more than 5 percent of the flow, of the mean annual flow of the river. For lakes, there is other requirements, but those are all outlined, and I think fairly clearly established in the rules. And these rules are, where there is a State program that we administer, these rules are equivalent to the Federal rules. They're no more stringent. We've not tried to add in any Montana specific requirements in these technology based rules.

So these are all in different sections,

but the less than two is Subsection (3); the between two and ten are in Subsection (8) of the rule; and facilities greater than ten MGD requirements are in Subsection (7).

Subsection (9) says, well, if you can't meet that, there is some alternatives, and if you can't meet those, then you can make some alternative showings that we can look at, and grant basically a variance from these requirements. And those are outlined in Section 9 of this rule, and also again in New Rule IV, alternative requirements calls for disproportionate with model technology. So those are a lot of factors that we look at for granting variances to those model technologies.

Any questions?

MR. LIEU: Tom. Mitchell Lieu. What is the difference between incorporating by reference and actually writing the rules down? Is there an advantage as far as ease of use, or enforcement, or why the change?

MR. REID: First of all, we did not have any of these rules incorporated by reference, of these cooling water intake -- Of these New Rules. I think the advantage to having them on our books,

so to speak, is that we have a lot of facilities that come in, and they have these cooling water intake structures, but the permit writers don't even pick up on that. So we permit them, we issue them an MPDES permit, and we haven't applied to the rule, and then the EPA comes back and says, "Well, you're not following the Federal rule."

So this kind of gives us, the permit writers, a play book.

MR. LIEU: A bit more visibility.

MR. REID: Yes. And it also -- I've had a lot of calls from facilities that want to locate in Montana. They may want to build. It doesn't happen every day. But their first question is: "What do you do for 316(b)? Who is administering that in Montana? Do we have to go to EPA, or do we have to go to the State?" And then the next question is -- because we're delegated to that aspect of the MPDES program. And the next question is, "What standards are you going to apply to me? Are you going to be more stringent than Federal rules?"

So what this does is it kind of gives us enough to work with, so that we define how we're going to apply these rules. And then we've

incorporated by reference. We've still incorporated a significant portion of these rules by reference, where it's clear and explicit that you do A, B, and C, and those are the same things that --

The monitoring requirements and reporting requirements, we are adopting by reference, so we're leaving those sections out there. So we're just saying after we do all this, this is what we're going to do in issuing a permit. Then we have to have these monitoring requirements and reporting requirements. So I guess that's kind of the difference.

Again, the Federal regulations, a lot of the regulations refer back to the Federal Clean Water Act, because that's where they get their authority. So in reading and applying the Federal Clean Water Act or in Federal regulations, it may say something like, "Pursuant to Section 304(j)(i) of the Federal Clean Water Act," so it qualifies how you apply that. Then you have to go look at the Federal Clean Water Act. By that time, you've probably thrown it away, and gone on to do what you have to do.

So I think these rules give a pretty

clear road map of how we would write a permit, and when we have to go to the Federal rules, we go there.

The next rule that we're -- I think we've covered New Rule II for new facilities. New Rule III integrates with that, and it is the information requirements that we would require that a facility -- this takes an intensive amount of information. It's a lot of information.

We are currently in the process of doing this for an existing facility, and it took three years worth of baseline data. It took a lot of engineering, and design work, and economics, and cost comparison to come up with that. We don't want to have to do that. We want the discharger to come up with that information. So that is what's in New Rule III, is the information requirements for those new facilities.

And then New Rule IV, I think I already mentioned it briefly, is alternative requirements, and that's when all of the information you collected, because of some site specific factor, says that the cost to that new facility is totally disproportionate with the cost that EPA considered in developing this rule. And they looked at

everything. They looked at all of the various technologies that exist to minimize impingement and entrainment at cooling water facilities, and they have volumes of documents of what they call their technical support documents for this rule where all those costs were compared.

So if it says because of some unique factor that a facility in Montana would have, it's wholly disproportionate with the costs that are normally associated with that type of technology, then we can grant them. Then this provides -- I don't want to call it a variance because technically it's not a variance. It's an alternative requirement.

And finally, we get down to New Rule V, which is the last, is technology based requirements for existing facilities. These are facilities that were existing in Montana, in this case, prior to January 7th, 2002.

In that case, the EPA promulgated -- if you look in the Federal regulations, they were promulgated and adopted in 2002. They were in litigation for almost five years. And in 2007, EPA suspended that rule, all but one portion, and that one portion remains on the books, and it says

that for existing facilities, the permit writer must use best professional judgment, which has been the requirement since 1973.

EPA promulgated rules in the 1970s for cooling water intake structures. Then in the 1970s, again, those were challenged by industry, and thrown out. Then they were sued for not having rules, and they reached a settlement with the Court. And I'm kind of skipping over a whole bunch of stuff of the process here. So in 2002, they came out with these rules again. They were sued again in 2007. EPA suspended those.

These rules have been debated, and some the most interesting discussion was the discussion, the Supreme Court discussion on the ENTERGY case, which is a company in Massachusetts, I believe, and they were challenged, and the Supreme Court ruled ultimately in favor of the EPA rules, but they had already suspended them. And they determined that the level of treatment technology applicable to cooling intake structures was based on best practical technology currently available, BPT. So that's the test that we are now using for existing facilities, and that's in New Rule V.

And that's it. I'm happy to entertain any questions.

CHAIRMAN TYLER: Questions for Dr. Reid?

(No response)

CHAIRMAN TYLER: Tom, you're hoping to come away with a recommendation that the rulemaking proceed; is that it?

MR. REID: That's correct.

CHAIRMAN TYLER: Discussion from the board? Questions? Discussion? Comments?

(No response)

CHAIRMAN TYLER: Do we have a motion? And while Tom is here, maybe somebody needs to have help with that motion.

MR. LIEU: Motion to recommend to proceed with rulemaking.

CHAIRMAN TYLER: Second?

MR. SALLEY: Second that.

CHAIRMAN TYLER: Earl second. Further discussion.

(No response)

CHAIRMAN TYLER: All in favor by voice vote.

(Response)

CHAIRMAN TYLER: All opposed.

(No response)

CHAIRMAN TYLER: Motion carries. Thank you, Tom.

So I guess the whole day is going to be abbreviated. Tom, you've got another half hour. Maybe you should come back. Claudia isn't here to replace John North for our legislative update, although she's not on the schedule until eleven. So should we do a little flip flopping here and ask Jenny to present on the pesticide fee rule? Can you do that?

MS. CHAMBERS: Sure. Good morning. Jenny Chambers, Bureau Chief, Water Protection Bureau. I just wanted to kind of a briefing item. I just want to get you guys kind of up to date and up to speed on where we're at on the pesticide program.

If you recall, I came to the WPCAC to request approval to initiate rulemaking to impose a fee rule structure or infrastructure so that we could have a fee assessed in the fee rule package, so that when we developed a pesticide general permit that we'd have a mechanism to charge a fee for that new permit that may be required or may be issued. We did initiate rulemaking, and we're

planning on going back to the main meeting to the Board to ask for final adoption of that fee rule package.

So history, a little bit. The Sixth District Court basically required, changed the exemption under the Clean Water Act that now requires pesticide applicators to State waters to be compliant with the Clean Water Act, and therefore have an NPDES discharge permit, National Pollution Discharge Elimination System permit.

As Tom indicated, since we are the delegated state for primacy under that program, we would then be required to issue MPDES permits for direct applications of pesticides to State waters. So that was a ruling that came out April 9th, 2009. EPA appealed the Courts, asked for an extension of time to allow, not only them at the national level to develop a permit, but also allow the states that have delegated primacy to develop a permit, and that -- it will expire April 9th, or did expire April 9th, 2011. There has been some things that have happened between now and then that I'll talk a little bit about.

So because that permit requirement was in place, we need to not only develop a permit,

but we also needed to have a fee structure set up in order to request or receive applications, or notices of intent to comply with those permit conditions. So that was a fee rule package.

There was some fees that were established that were pretty high. Trying to figure out what our universe was, where we were at on NOI applications. We basically looked at having a single county coverage, and then a coverage area that was based upon Montana Department of Agricultural district area in the proposed package, and the fees were around $1,500, $1,600 in the original proposed package. We have subsequently reduced those based on response to comments.

We got quite a few comments, which we knew we would get. You always do when you get fee rule packages. They're cut back pretty much by half. We looked at two different threshold levels in the final permits, so we have a single county, multi-county NOI, that's below the threshold use of pattern uses; and then above threshold for kind of risk based application of pesticides to State waters.

For instance, if there is a weed and

algae, and you're spraying directly on State waters, at 64 acres you're above that threshold. If you do more application than that, then you hit that threshold trigger. Anything below that, you would file an NOI to say you're going to comply with the Tier 1 portion of that permit. We changed the district area MDA to --

OPERATOR: Mike Wendland is joining the meeting.

CHAIRMAN TYLER: Good morning, Mike. It's Dude. We're in the middle of Jenny Chambers' presentation. We've hopped around on the agenda. Claudia is here for the 11:00 legislative update, but we finished with Tom Reid's presentation a little early, and so we're hearing Jenny Chambers' pesticide fee rule presentation.

MR. WENDLAND: Good.

MS. CHAMBERS: And we got a lot of comments on breaking it up by the Montana Department of Agricultural field district area, so we looked at a multi-county designation of 20 contiguous counties, so an applicator could choose to have permit coverage or NOI coverage for 20 counties, that they would then pick what counties they wanted coverage on. It had to be contiguous

county area to break the state up that way.

So there's a below threshold level, which is a Tier 1 in the permit, and there is either a single or multi-county, and those fees are very minimal. It's $25 for single county, $50 for application for multi-county, and those are below the threshold, which is more just a notice of intent you're going comply with the permit conditions; and then above the threshold, that's where your risk is based, based upon applications to surface water. There is additional requirements that are Tier 2 annual reporting requirements, pest management plan development, and all of them have adverse incident reporting based upon that permit condition.

So where we're at in the process basically is that we're going to the main meeting at the BER to ask for final adoption of that fee rule package. We've done a tremendous amount of stakeholder work throughout this whole process, so I'm pretty comfortable with where we're at as far as going to the Board.

We issued the permit April 9th, 2011, so it's currently posted on the website now. EPA has got another extension from the Court system to not

require NOI's. They're still working on their actual permit, and so the Courts extended them through October 31st, 2011.

We already were kind of banking on that going through the process before we issued the permit on April 9th. We have six month delay of effective date on our permit, so the permit issued April 9th will not be effective until November 1. So through this next season, pesticide applicators would just have to comply with our 308, under section 308 program, and then we can work on technical assistance and education through the winter, and then get them to submit NOI's for the next season if it goes forward. So we're kind of in line with that with the Federal action.

There is also a House resolution bill in Congress that passed the House of Representatives. They're looking at amending FIFRA to make it clear and concise that pesticide application to State waters will be covered under FIFRA, so we don't have a duplication between what's complied with under the Federal Insecticide, Fungicide, Rodenticide Act, compared to what's complied with under the Clean Water Act.

And so we're just watching that, we're

watching that legislation to see what happens. It hasn't been presented in front of the Senate yet. It passed the house. And if federally they change the exemption back, where they make it clear and concise, and it's not the dual Federal act requirements, we'll pull that back, and ultimately eventually we'll go back to the Board when we go to the rulemaking again for fees, and we'll repeal that section of those rules that we've already promulgated, or we've asked for to adopt.

So it's kind of been a fun exercise the last couple years to track the different stages of where we're headed, try to get our programs built as far as infrastructure, get the permit, work with stakeholders, and move forward. So I just want you guys -- to kind of bring you up to date on where we were, and that we have complied with that requirement, and we had the mechanisms just in case we need to pull things back as we move forward.

Any questions?

(No response)

CHAIRMAN TYLER: Do you want to continue, Jenny, or should we go back to our agenda and --

MS. CHAMBERS: I didn't know if you wanted to keep CBM altogether.

CHAIRMAN TYLER: Okay. Let's do that.

MS. CHAMBERS: Tie it together.

CHAIRMAN TYLER: So Claudia is here in place of John North for our legislative update.

MS. MASSMAN: I don't have a lot here. This is sort of a last minute deal, so I'm just going to tell you the bills that went through that have to do with water quality.

The first one is House Bill 52, and gives the Board of Environmental Review rulemaking authority to adopt rules and standards for reclamation and reuse of wastewater.

The next bill is House Bill 28. That has to do with mixing zones, and what it does is say that any mixing zone cannot go beyond the boundaries of a subdivision. I guess the bill has an immediate effective date, so from now on, when we're reviewing subdivisions, mixing zones won't be able to go beyond the boundaries.

Senate Bill 267. That has to do with TMDL's. We had a 15 year deadline for completing all TMDL's on a 1996 list. This bill removes that deadline, and doesn't make us work on a specific

list, so the Department now has discretion to do TMDL's wherever we think is appropriate.

However, this bill does not remove the Federal Court imposed deadline. The thought was that we go ahead and get this bill passed, and hopefully convince the Plaintiffs that we could go back to Judge Molloy, and get the other deadline, Court imposed deadline, removed, but that has yet to happen. But anyway this sets the stage for that.

Senate Bill 367. That bill goes back and revisits -- We had a bill pass last year that would allow the Department to give individual variances from base numeric nutrient standards. These base numeric nutrient standards have not yet been brought before the Board, but the Department wanted to make sure that when the base numeric standards are adopted, there would be a mechanism in place so that wastewater systems that can't meet those standards would have a chance to get an individual variance.

Over the past two years, we've been looking at what's called a nutrient work group, and it's been very difficult to determine how we do these individual variances for a number of

reasons. It's kind of resource intensive. We kind of got bogged down on how to figure out how to give individual variances for industry, because part of the test that EPA wants is that you demonstrate widespread and substantial economic harm.

There was also confidentiality issues related to getting the industry to come in and explain their finances, and why it was going to cause economic hardship for them.

So this year, kind of at the last moment, industry brought in a bill, and we all worked together on it, and this bill goes back and adds a general variance to what is now 75-5-313. That's the statute that allows us to give individual variances. That statute has been amended to say that if you have a certain type of discharge, and you qualify by meeting certain numeric limits, you automatically qualify for a general variance.

And the Legislature kind of backed that up by making a legislative declaration that anyone trying to meet the base numeric standards is going to suffer widespread economic harm or impacts. So the Legislature has already made that finding, and

then they've adopted these general variances.

Those general variances will sunset in 2016. The numbers in the statute now will disappear May something 2016, but the statute also requires the Department -- before the statutory numbers disappear, we're supposed to adopt those numbers into rule, and it's the Department, not the Board, that will have rulemaking authority to adopt these general variances in rule.

Then the Department is supposed to go back and revisit the numbers that the Legislature has adopted every three years, and if it becomes more feasible to kind of ratchet those numbers down, then Department will go through another rulemaking, and adopt new numbers for these general variances.

I guess I explained more about that bill because we've been quite intimately involved in trying to see that through. It's going to help the Department, we think, get the base numeric standards adopted, because the individual variances, it was kind of like we can't get the base numeric standards adopted without some mechanism to give dischargers relief; and with these statutory variances in place, we think that

step has been accomplished.

And the last one is Senate Bill 9, and this also has to do with mixing zones, and it's a way for -- I think it's the Department can grant mixing zones for petroleum clean-up sites. I don't know a lot of details about that, but that's another one that had to do with water quality.

And that's all I have to report. If there is any questions.

CHAIRMAN TYLER: Thank you, Claudia. Any questions for Claudia.

MR. HOEHNE: Richard Hoehne. Claudia, the mixing zone for subdivisions, the mixing zone has to stay within the whole subdivision, not on lots, correct?

MS. MASSMAN: That's right.

CHAIRMAN TYLER:

MS. CHAMBERS: Unless they get an easement. You can still allow for an easement off the property. If they get an easement from that neighboring property to allow the mixing zone to extend on that property. So -- and that's for new subdivision development, so it still should be able to provide some growth if they are able to get easement on that neighboring property for the

disclosure.

CHAIRMAN TYLER: Thank you, Claudia. No more questions?

(No response)

CHAIRMAN TYLER: So Jenny, is it time for us to move into the CBM?

MS. CHAMBERS: Again, Jenny Chambers. I don't have a lot to present. I just wanted to kind of do a brief update on coal bed methane, and permits, and kind of where we're headed, and how the permit shop does compliance and oversight I guess on the permits that we issue, in kind of general sense, kind of lay the framework.

Currently the status in Montana is that we have three coal bed methane permits in the whole state of Montana; not nearly as many as Wyoming has had or have. Production I think has gone down quite a bit in the last several years.

We have one current permit with Fidelity Exploration Production Company issued 11/14/2010; one for Pinnacle Gas, or Summit Gas. They've changed their name. Admin. continued. It expired on 12/31/2009. However, we have got that drafted, and it's scheduled to go out for public notice 4/18/2011. And then one for OW Ranch, which was a

new discharge, new permit facility that was issued December 2010.

So we're maintaining these permits. We're getting them renewed fairly quick behind the expiration date, so I'm pretty proud of that as far as the group goes. We conduct routine compliance inspections, and the frequency of coal bed methane inspections in some of our industrial dischargers exceeds the recommendation of frequency from EPA. EPA recommends that major facilities be inspected once every two years, and minor facilities be inspected once every five years.

Currently Pinnacle Gas or Summit Gas, we've done six inspections since that permit was issued. The last one was 9/29/2009. Fidelity has had four inspections since it was issued. The last one was in 2009. And the OW Ranch was a new permit, like I said, in 2010. We've had a site visit on file. There is nothing to really inspect. It was more of a prepermitting site visit to get a general sense of the layout of the land and the area. There is no discharge at the facility, and there is no treatment plant built.

During compliance inspections, we have

three main objectives. We determine whether the discharge is in compliance with regulations, permit conditions, and other program requirements. We verify the accuracy of information submitted by the permittee, and we verify the accuracy -- adequacy and sampling and monitoring conducted by the permittee. It's a self-monitoring program that requires them to submit discharge monitoring reports. They have extensive sampling and monitoring requirements.

And when we go do a compliance inspection, we look at bench seat date information, make sure they report the information correctly. We will collect our own samples as well to verify results.

So coal bed methane facilities, permits are required, sample requirements, both of the effluent, the discharge, and in-stream monitoring. We justify and document a lot of our inspections, sampling data, and compliance status in the permit fact sheet, so we look at, review those every five years as far as history and compliance trends. We do extensive inspection reports when we do those inspections.

And since Pinnacle Gas or Summit Gas's

CBM permit will be going out for public notice here next week, that would be a good example to look at, the new, recently issued, drafted, Pinnacle Gas Renewal permit, if you wanted to look more closely at a coal bed methane discharge permit.

Also Pinnacle Gas has not directly discharged since 2007. They currently have off-channel storage ponds and injection. So we only have one direct discharger, Fidelity, which has been renewed last year, that requires them to treat all of their effluent. So we've been pretty proactive I think with coal bed methane in Montana.

Some of the impacts could be the question between what comes in from Wyoming versus where we're at in Montana, but that's kind of a general overview of the permits we have, and kind of the reporting requirements that we seek. Any questions?

MS. BUCKIN-SANCHEZ: Jenny, I have a question. Is the permitting process similar to Wyoming and Montana?

MS. CHAMBERS: We're both delegated states from EPA perspective. Coal bed methane

does not have what Tom was referring to, minimal treatment requirements for Federal ELG's that established for all coal bed methane facilities. It is required for the permit writer to do best professional judgment.

So I would say with that, yes, there would be a difference in what we consider best professional judgment or the minimal level of treatment needed. Our water quality standards are different, and some of the water quality impacts and standards for Montana are different. So our permits do look different than Wyoming. Good, bad, or indifferent, I don't know. It is just the nature of where we're at.

MS. NEUMAN: My question would be concerning the Legislature. Has the Legislature been working on some model rules for the state? If so, could you explain that a little more clearly.

MS. CHAMBERS: I'm not really clear. There hasn't been any legislative actions on model rules for coal bed methane. They've been working on carbon sequestration from the deep injection of carbon footprint, but not in coal bed methane for discharge directly.

There was some question at one time whether or not we had legislative authority to do best professional judgment, to require a minimal level of treatment for coal bed methane facilities. The Courts has resolved that now for us, so we do have the authority.

MS. NEUMAN: This had to do with setting standards. Say you had a piece of property, and they were going to do some discharging near you or whatever, and the effects. They would set some standards of the agricultural land as it is now, and then any degradation that may occur should some of the water affect the quality of the soils afterwards.

MS. CHAMBERS: Well, maybe Bob could talk a little about the water quality standards for coal bed methane discharger in the Tongue River Basin is based upon the use of agriculture, and so the permits are written to protect based upon the standard that's been developed, but it's a standards in the BER rule package, not a legislative action.

MR. BUKANTIS: I think perhaps what you might be getting at, Stevie, is I know there is some legislation that was looking at, I know at a

minimum, removing some funding from some program that would reimburse landowners from any potential damages. And I haven't been tracking that. I'm not sure where that is at. Roger, you and I were talking about that just a little bit earlier. I don't know if you have anything, if you know any anything about that.

MR. MUGGLI: I'm Roger Muggli. The situation is extreme, when we've had the mentality that we're going to permit, based on the river or whatever ideas that are out there, and we didn't take into account the soil types that are irrigated. In lies the problem. The problem is that you have clay type soil anywhere from an amount of 5 percent in some cases to 80 percent. You have a different effect range on that soil, and what happens with it after irrigation with CBM water.

And if that isn't complex enough, the alternative thing that really moves this is if you have a rain event, and the rain event, if it happens an hour after you've irrigated, or ten hours, or 30 hours, it has a profound effect, because you have that shift of EC and SAR. The EC drops and the SAR goes up, and in lies the

problem. And you compound the complexity of the issue with the percentage of clay soil you have, and there lies the problem. That's where we have had the collapses on our place. The soil varies.

In my presentation, I have some pictures that can show how this is brought to light. And when you see these collapse situations on these fields, which we have never seen before CBM, the elevation of the EC and SAR in the water is where you have the problem. If you irrigate, the type of soil is where the problem comes in. If you have sandy type loam, that isn't the case.

On our farm we've seen this steadily dropping, and tons per acre average on the farm. So it's a monumental problem, based on the State's inability to make these standards applicable to soil type. There needed to be soil range in there that was incorporated into this, or it's an invalid discharge permit. There is nothing -- It is relative to nothing. It's all relative to soil, how much of a percent of CBM water you can utilize. It's all about the soil.

MS. CHAMBERS: So we can get with Bob, and maybe figure out what that legislative number is, and look it up, and see what the status is,

and get back to the Chairman.

MS. NEUMAN: I think it goes into effect July 1st, was my understanding.

MR. BUKANTIS: And the piece of legislation I was talking about is a land owner type bill. I think that's what you're -- we can follow up on that for you.

MS. NEUMAN: Okay.

CHAIRMAN TYLER: Did that answer your question, Stevie?

MS. NEUMAN: Yes. Bob and I are on the same page, I think.

CHAIRMAN TYLER: Questions for Jenny?

MR. FISHER: This is Cory. I had a question. I was just wondering if through those inspections, if everything was found to be in compliance, or if there was anything that wasn't quite up to snuff.

MS. CHAMBERS: With all inspections or procedures we do, whether it's coal bed methane or POTW's or industry, we do inspections, and we document the findings. Those could be from anywhere from actual violations, to recommendations for improvements, to "please address these, and then provide us a response back

30 or 45 days in a response on how you're going to correct deficiencies, or address violations."

I can't say specifically on any one of these in 2009 whether or not my inspectors documented any violations. There is nothing significant that's been raised to the level from the inspector to move forward with formal enforcement in order to correct those deficiencies. That's usually the next stage of the game if there are any.

So it probably wasn't ability for us to document something, provide us a report back within 30 days, compliance inspector evaluates that they've met the requirements, based on following up after that inspection, and we're moving forward with compliance with the permit requirements.

MR. MUGGLI: On these inspections, how was the gallon totals on discharge determined? What did the Department, when the individual went out to inspect these, how did they determine the gallons of discharged water, gallons per minute? Or what was the volume? How did they arrive at -- through the inspection, was the volume achieved?

MS. CHAMBERS: I'm assuming you're only

referring to the direct discharge that we have, which is Fidelity. And at the time, when they do the inspection in 2009, they had like I believe eight to ten outfalls that were discharging at any one moment, but they had a lot of outfalls that were going off around the Tongue. So you can't verify the actual flow. They have monitoring, they have sampling requirements, they would allow you to send sheets of data and information that looked at that. Plus we have the ISIS data base on information.

But I'm not at those inspections. You know, I'm sitting in the office in the -- figuring out where we're at. But Dave, can you talk a little bit about what Dan did when he went out there to verify?

MR. OLSON: Dave Olson with Fidelity. We have totalizer meters on all the outfalls. We know exactly how much water is going in the river at any given time. At the EPA office, go into the computer, pull up what number, what the outfall -- currently we only have three outfalls. Under our new permit, we're only utilizing one. Again, there is a meter on the outfall, radio access at the office. We know exactly what's going to the

river at any given time.

And I've been involved with all four inspections that we've had, and we go to the outfall, we inspect it, check the meters, that they're working; we go back to the office, he checks all our paperwork, as far as any of our analytical, chain of custody from the lab, analytical reports, DMR's, all of the paperwork, and we've had no deficiencies with any of these inspections. So does that answer --

CHAIRMAN TYLER: Thank you, Dave. Questions for Jenny?

(No response)

CHAIRMAN TYLER: Thank you, Jenny. Roger, do you want to fit your presentation in prelunch?

MR. MUGGLI: I can right after a break, if we could have a break first.

CHAIRMAN TYLER: Shall we take a break? Let's take a ten minute break.

(Recess taken)

CHAIRMAN TYLER: We'll go ahead and regroup here, and Roger Muggli has a 45 minute presentation, after which we will break for lunch. Roger, go ahead.

MR. MUGGLI: For the record, my name is Roger Muggli, and I manage the Tongue and Yellowstone Irrigation District at Miles City, and we have a diversion dam twelve miles south of Miles City on the Tongue River. It's a ten foot differential in water elevation from front side to back side.

And so it's been there since 1886. My family has managed T&Y since 1925, I believe it was, or 1926, around that period of time. My grandfather managed it, and it was severely in debt at the time, and he managed to employ the family to get it out of debt. And my family has basically taken care of the ditch company since that time.

My father took the secretarial position in 1957 from my grandfather. My grandfather's reign, two major things that he accomplished was bringing the Tongue and Yellowstone Irrigation District out of debt at a reasonable cost, that irrigators could survive with; and he was one of the authors of the Yellowstone Compact, the third attempt that passed in 1950.

My dad took the management of T&Y over in 1957, and his major accomplishment was capping

the 300 foot wide or long dam, which was a planken top surfaced with concrete.

And anyway, I took over in 1987, and I'm a horse of a little bit different color. My reign or family existence on the farm consisted at a very young age of taking fish out of the field that were entrained in our canal, and moved in the canal some 20 miles downstream. Our farm is north of Miles City. And I'd collect these fish in a bucket out of the irrigation ditches when Dad turned the water off, and go to a different field, and take the fish and put them in a bucket of water, take them to the river, and let them go.

And so that was sort of the beginning of my bizarre journey in water quality, water -- do things right on rivers. At a young age I became painfully aware of the environmental impact the diversion dam created, and it's been a lifelong goal to try to do something about this.

And so having that vision at a young age, I decided to run for the position my Dad had, which was secretary of T&Y, and I got that position in 1987, and that's when I started raising all the Cain about water and issues relative to fish passage, shared resources,

irrigation fisheries problem that is so rampant in some irrigation systems.

And I at an early age decided that one way to try to accomplish some of this stuff on these fisheries is not wait until we're dictated to change the format of where irrigated agriculture, especially in the west, the northwest was heading. And as we have seen the results of a lot of pain and suffering relative to irrigated crops/fish passage issues.

And I was a firm believer that jumping out in front of this train would maybe be the apropos thing to do. I had really no longing to see fish entrainment into the canal, and it was painfully aware to me, painfully visual there was nothing good to come of it.

As a result of the T&Y diversion dam that's twelve miles south of Miles City, hence the name, there was six or seven species of fish left in the Tongue River south of the diversion dam, and 49 species north. And my goal in life was at a young age to change this.

Many years went on, and I finally got a new inlet structure which was going to be having to be replaced in my reign with T&Y, in the fact

that it was an old, old high pressure head gate systems, two head gates, high velocity, and water rights 187 and a half cubic feet per second comes roaring into the canal at very high velocity. The concrete was chewed off in the bottom as a result of a lot of gravel passage.

And the fish would entrain into the channel or the under water channel that went up river from the head gates, and of course they'd get in this -- the migration of these fish, when water gets warm in July and August, always migrated out of that section of the river back to the cooler waters of the Yellowstone, and then they'd migrate back up in the late fall or the spring, depending on the species.

But since 1886, the Twelve Mile Dam was the end of the line. They couldn't go any farther. So the downstream issue had to be worked out first, and that was essentially putting in a new inlet head gate system that was complete with a fish louver system that would bypass the fish back into the river below the dam. So that was half of the issue.

The other half was putting in a channel, diversion channel, around the end of the dam on

the west side, a 600 and some foot long channel that goes around the west side of the dam to allow the migrating species of fish to move back into the Tongue River south of the dam.

So anyway, I'm getting a little ahead of myself on that point right now, but I've got some slides that we need to discuss. In light of the folks on the phone, I was going to ask Brenda to read through these things, help me out here, so if you want to --

MS. LINDLIEF-HALL: My name is Brenda Lindlief-Hall, and just got recruited to help Roger out, so I'll be reading what he's got up on his Power Point presentation. The first point that he's going to discuss are water quality wins; second, he'll discuss water quality problems; third, he will discuss electrical conductivity and flow data; then he'll discuss crop damage; and then he will further discuss the Muggli Fish Passage.

MR. MUGGLI: Incidentally, I'm going to add that it was named after me because of the effort. It wasn't by my design, and I'm not quite that arrogant, but all these years of the process, and it was a long arduous task, and they deemed

that it was my reward for all these years. I never took any pay or any money for it because it was the thing to do. It was a case of doing the right thing for the river, and that was why they elected to name the dedication.

MS. LINDLIEF-HALL: The 2000 statewide EIS on coal bed methane, it was the Federal and state EIS on oil and gas.

And then the second bullet point is in 2003, the DEQ issued an NPDES permit for coal bed methane discharges. I guess maybe that's referring to the Ninth Circuit decision requiring NPDES permits for CBM discharges. Then in 2003, all but one in-stream impoundment was eliminated. Is that referring to the legislation that eliminated in-channel impoundments?

MR. MUGGLI: Yes.

MS. LINDLIEF-HALL: Also in 2003, he Board of Environmental Review adopted water pollution standards for rivers that would likely be impacted by coal bed methane.

And then water quality wins in 2006. In 2006, the Board of Environmental Review removed the 2003 nondegradation exemption from the rule, from the previous rule, from the 2003 rule,

strengthening the teeth of the Board of Environmental Review's water pollution standards adopted in 2003.

And then in 2006, Fidelity was denied permission to market water out of state, and was limited on their in-state marketing. And those arose out of decisions by the Department of National Resources and Conservation, and then also by the First Judicial District Court.

And I just would clarify that the Department of Natural Resources and Conservation denied Fidelity's permit to market water to Wyoming, to export and market water to Wyoming, and limited their in-state water market. The First Judicial District Court ruled that the water that Fidelity wanted to market was groundwater. They applied to market water they called developed water in their pipeline. The First Judicial District Court ruled that it was groundwater, and so any applications for water rights beneficial use permits had to be predicated on that being groundwater, and not water in the pipeline.

And then in 2010, methane wastewater is considered a pollutant under the Clean Water Act. I'm not sure what that is referring to, Roger.

You might want to clarify that.

MR. MUGGLI: Well, the Clean Water Act, of course, is Federal, and it was just determined that it was a pollutant under that act, and so that's part of our premise of --

Our concern is, my concern on it, and it gets pretty convoluted in the fact that we sell seed in our business, and hay that's grown on the river to a lot of folks around, and we have this water gone, and it's pumped out, which is perfectly good drinkable water, that we lose the resource. And so connected with the Tongue River Water Users and all the ranchers on the river that have concerns with water loss, groundwater loss, it is an issue, and it's of huge concern.

Of course, it's got sodium bicarbonate in it, and that's fine for you and I and our cattle to drink, but to irrigate with it, it creates a huge problem, based on the soil, the soil classification and type it has. So in lies the problem.

MS. LINDLIEF-HALL: The second bullet point says, "Montana DEQ must establish TMDL's --" which is total maximum daily loads -- "for the methane industry." And do you want to --

MR. MUGGLI: Basically it has been a long battle to get the industry or the State to establish parameters for this water, hopefully for the better. It is a very difficult problem on soil types. It's all relative to soil, as I stated before. The water quality that is from sodic water is very difficult on the soil, not so much the plant. It is a soil related problem.

MS. LINDLIEF-HALL: The next bullet point says, "In 2010, methane wastewater must be treated prior to discharge," and I think that's in reference to the Northern Cheyenne versus DEQ litigation, where the Montana Supreme Court unanimously ruled that the Department of Environmental Quality must use its best professional judgment in establishing effluent limitations for coal bed methane methane discharges.

And then in 2010, wastewater practices, such as atomizers and evaporation pits are illegal. I'm not sure what it that is in reference to.

MR. MUGGLI: It was just part of the statute, of the legal stuff that they did.

MS. LINDLIEF-HALL: Total maximum daily

loads, TMDLs, have been postponed time after time. In the last ten years, over 1,080 coal railroad cars of salt have been dumped into the Tongue River.

MR. MUGGLI: That was a study that Art Hayes had -- someone did that basically came up with that number, and it was based on what was in the water, and the volume of water at the time, and all those issues.

MS. LINDLIEF-HALL: The next slide talks about Whole Effluent Toxicity tests. They're called WET tests. WET tests is the acronym for that. It says, "Fidelity failed WET tests on 156 occasions." And then the next bullet point reads, "DEQ let them off without any penalties." And I think that second bullet point is referring to an Administrative Order on Consent where DEQ and Fidelity agreed that they would come up with, devise some means to prevent or to deal with the toxicity, and in return DEQ wouldn't impose any monetary penalties.

This next slide is entitled, "Fidelity's MPDES Permit." MPDES permit, as you probably all know, stands for Montana Pollutant Discharge Elimination System. The first bullet point reads,

"DEQ redid the permit for Fidelity to include technology based parameters, and failed to require nondegradation."

And then the second bullet point reads, "Although discharges must be treated, DEQ is allowing Fidelity to discharge without treatment until this fall." And again under that second bullet point, I believe, that in November of 2010, DEQ and Fidelity entered into an Administrative Order on Consent, giving Fidelity until I believe August of this year to implement full treatment of all its discharges.

This next slide talks about the Guercio MPDES permit on Hanging Woman Creek. That's I think also referred to as the OW Ranch permit. Jim Guercio is the owner of that ranch, but I think the official name for that is the OW Ranch permit. And Hanging Woman Creek is a tributary to the Tongue River.

And the first bullet point reads, "Standards for tributaries were ignored in issuing that permit. Flow limitations were ignored. Ice jam problems are only being studied, but apparently they won't be studied until 2015."

MR. MUGGLI: The flow regime on Hanging

Woman is normally really low, and has really notoriously poor water in it. Increasing flow then is this really high EC coming down the Hanging Woman, which impacts the Tongue River in a totally different manner than its original flow of about one CFS, and between one and two CFS, to something in the four to five range. That's a whole another problem that really is exacerbated relative to volume. And then there is the ice jam problems of ranchers on there, just a lot more flow than normal.

MS. LINDLIEF-HALL: So Roger, just as a point of clarification. So the problem with ice jams is that that highly saline and sodic water will back up behind those ice jams, and spread out over the soil.

MR. MUGGLI: Yes, and then it creates a -- just spreads the problem. It takes longer for it to dissipate when it creates the flow and such that it creates enough ice that it creates ice jams. This water goes down country, starts freezing, and keeps building up, and in the spring it starts moving, and in lies the problem.

MS. LINDLIEF-HALL: "Standards violations." This is talking about the water

quality standards for electrical conductivity, which is abbreviated EC, and sodium adsorption ratio, which is abbreviated SAR. The first bullet point reads, "EC and SAR standards have been exceeded at Miles City, but no enforcement action has occurred."

Do you want to address that one, Roger?

MR. MUGGLI: It's all in the time thing. When the exceedence occurs, and then it peaks out, and it will rapidly drop back down, and then there is nothing that seems to be able to happen with it. There is no retribution. So you have this damage to the river, but then it spikes, and then it goes back down. And so of course we didn't see these problems before the days of CBM, and there is a lot of problems with soils and the fisheries as a result of this change. And so it's pretty rapid. It will change very fast. It shifts from high to -- drops off in a hurry and vice versa. It will raise in a matter of a day. It could be way, way high. So in lies the problem.

MS. LINDLIEF-HALL: So for this first bullet point, are you saying that the actual numeric standards have been exceeded?

MR. MUGGLI: Yes.

MS. LINDLIEF-HALL: Then the second bullet point says, "Nondeg," which is the abbreviation for nondegradation, it says, "Nondeg standards have been exceeded several times, but no enforcement action has taken place.

MR. MUGGLI: And that's part of the problem. When these exceedences occur, then it is very difficult from anyone's perspective how to sort it out, and so it is sort of -- we blame the animal that's the most obvious, and that's CBM and the discharges, and there's just no way of putting a handle on it. It's very, very difficult.

MS. LINDLIEF-HALL: And just for clarification, nondegradation was implemented during the 2006 Board of Environmental Review rulemaking. Nondegradation standards are designed to protect that increment of high quality water between the water quality standards and the actual quality of the water.

MR. MUGGLI: We're going backwards up the river now. Miles City, that's the EC on -- The dates are at the bottom here of this year, and you could see how radical it will change. When you have an influx of water, whatever the event, the front of the water will be the worst; and then

the EC, as it dilutes it, it dilutes the pollutants, and then you have a severe drop, but you have the damage in those ranges.

One of the things when you look at the fisheries, you have sauger walleye, for instance, won't -- you get an EC over 1,000, and you limit their reproductive to about four percent, and you can't sustain a population of fish on four percent. And so it is a very difficult thing, and those shocks, when it jumps up that high, that's why the Tongue River now is pretty much void of sauger walleye. You don't find them in the Tongue River anymore, and they used to be --

In the 1970s and 1980s, I know behind the diversion dam, there is a fish platform there, and there was a lot of sauger walleye caught there, and anymore it doesn't happen because the EC is too high. They don't use the Tongue as a spawning trib anymore, so they primarily stay in the Yellowstone.

And that comment is derived from the fisheries of doing net tests 24 hours a day ever since I have put in the fish passage on the Tongue. You'll see that in a minute. All summer, 24 period every week, they net the fish that come

up the fish channel on the west side, and they have yet to catch a sauger walleye. There is probably a reason why -- there is no other logic to it, why they're not in that reach of the Tongue River anymore, is because the EC is just too high, and they just stay out of there.

MS. LINDLIEF-HALL: I wanted to make a point of clarification. Roger uses the term EC or electrical conductivity. I think that term is interchangeable with specific conductance that you're seeing on this chart, and electrical conductivity or specific conductance is a measure of the salinity of the river.

MR. MUGGLI: And you will notice the date on this, March and April. The industry always felt that our irrigated land that is on the Tongue River drainage, meaning T&Y irrigated land, was the reason for elevated EC and SAR, as drained water coming back into the Tongue River between the Twelve Mile and Miles City, whereas 25 percent of T&Y's 95,000 acres is on the Tongue drainage, the rest of it is on the Yellowstone.

In this time frame, there is no irrigating there at all. And geographic is really important. Below the Twelve Mile Diversion Dam,

there is Pumpkin Creek, Mill Creek, Log Creek, and Squaw Creek. All dump into the Tongue, and there's a total of about 680 square miles of drainage drains into the Tongue River north of our Twelve Mile Diversion Dam.

And so a lot of the poor quality water that is attributed to irrigation and return flows of T&Y into the Tongue, and I'm saying that's not the case. It is this land that come -- If any of you are familiar with the land south of Miles City, there is some really heavy gumbo clay soils with all kinds of bad constituents in these soils that drain in there.

And Pumpkin Creek goes clear past Ashland and Broadus to the south, so it drains a lot of land, and that's the result of it, and that's why this is significant, because at this time, this date frame, T&Y, the canal isn't on, so return flow is minimal to none.

This is a discharge in cubic feet per minute at Miles City. The medium roughly is those triangles for the last 60, 80 years, and that's what the flow is now. It is up significantly.

Now we're backing up the river to the dam. We're twelve miles south of Miles City on

the highway miles, and it is about 18 miles river. And of course, you can see the terrific and erratic up and downs in it.

This is at the dam. Our water quality station is just about four or five miles up river from the diversion dam. This is what the flow is.

This is at the Birney Day School up Birney, Montana, and this is the data for there, and the dates, and of course, that's how erratic. It goes up and down. Of course, the flow regimes are determined, or how the salts is, because as it moves it downstream, when the flow is picked up, it takes more of it out of there as it drops, and it falls off.

MS. BUCKIN-SANCHEZ: Roger, why do you think the shape of the peaks is different in the different --

MR. MUGGLI: It is the event, the water event at lower flows has a tendency --

MS. SANCHEZ: -- to mix, more mixed?

MR. MUGGLI: Yes, and then the front of it hits, and then a short period after that, it washes these salts downstream, and then it starts to fall.

The thing is lot of this stuff happens,

or occurrences happen, but not to that degree. What the problem with CBM discharge is that it just makes the problem -- exacerbates it.

And one comment that stuck with me a long, long time. I listened to a conversation my dad and my grandfather -- now, that's a long time ago, because Grampa died in 1967 -- and the conversation was based on, "I wonder how long we're going to be able to irrigate this land with this clay soil type that we have, and how erratic the soil is in places?" In three feet, it can go from the worst clay you ever saw to quite moderate.

And their concern was that if anything happens, or anything changes in flow regime, or the weather patterns change -- and they had no vision of CBM development -- and we're thinking of these big hills southeast of Miles City, or south of Miles City, that drain in there. "Is that going to change the water significantly enough that we're going to be not able to irrigate this clay soil anymore?"

My point is that what's happened is that it could be a very incremental amount from the sodium bicarbonate in this well water that enters

the river. My whole point is it's not what the river, and not what the water can hold, and stand, and change it, it is the use of the water. When you irrigate this soils, you irrigate these fields, and these fields go from loam type soil to a clay in a very quick order, then you have these problems, and then you have these problems of soil sealing. And it isn't --

The problem itself is relative to air and water movement. Once you look over this clay soil, then there is no longer air goes to the roots, and we have this slicked over soil because we have this elevated EC and SAR on these soils, so therefore the plants start dying, or they don't do nearly as well.

This is one at Tongue River Dam near Decker, and that's what we're looking at for now -- Why the sharp change, I'm not sure, but that's what the reading is, and it is very high. Before the days of CBM, CBM in Montana and Wyoming -- and it is a bigger issue with Wyoming, but we can't hardly say much to Wyoming if we're doing it north of the border. That's one of the big huge problems, and that's how Wyoming uses its wells. "You guys are discharging down there, so clean up

your own act first, and then you can talk to us."

Well, with clay soils, it's all relative to the soil. It absolutely is where it's at, and it is where the problem just hits, and in tonnage, and the whole bit, on alfalfa.

This is the 71 year average on those days, is what it amounts to on the Tongue River at Decker.

And then you get these kind of peaks, and we used to didn't have those when you have these kind of peaks to that degree. It was more of a flattened off number, was more level, didn't have that kind of result.

This is Hanging Woman, and of course, that's how drastically that thing can change. And the EC is just off the charts, whereas if you discharge CBM water, then you have that kind of numbers, and it's way up in those volumes. And of course, the volume is what negatively effects the river. Of course, before the CBM discharges, if we had one to one and a half cubic foot per second coming out of the mouth of Hanging Woman, it was one thing; but now if you have four or five and these kind of elevations, then it's a real issue, and it makes it --

That's fairly explanatory in itself. That's cubic feet per second, and that's where we get into what I was just stating, that we get flows like that, that high, and then the water quality is an issue on the effect on the Tongue.

And here is on our fields of clay soil, and this picture, this is the flat area, and this is a border dike, dark green, much better growth. This is another 100 foot, another dike, and so on. When the dikes, of course, are made out of the same material as the rest of field is. When you start --

This field is suffering from sodic collapse, and it is a high clay content in the soil. It's probably that 80 or 90 percent. You look at it and you think, "Jesus, why are we even farming this? You can twist your ankle when it dries out, the cracks are so big." And it's what we're blessed with, and it's what there is there, and it can change very rapidly, the soils.

There's what it looks like, a close up after the event, after it started to finally dry out, but it was there long enough that it created this slick stuff, this slick ground. And you just could not even walk on it, it was so slimy and

slippery, and when it's like that, it's real cemented together, so the drying time is increased. It was just like a --

OPERATOR: Mike Wendland is leaving the meeting.

MR. MUGGLI: This clay, it just can't move air, eventually water through it, and then of course the roots start rotting off, and you get this yellowing and then dying of the plants. That's what happens.

And this is that same field. That picture, the previous one, was right in this area right here. And that's how quick this clay, this montmorilonitic clay, go from 80 to 90 percent. We have Lake Glendive in the last ice age to blame for that. It really made the soils in our area convoluted, because it was the shore of Lake Glendive.

So you have this strange bizarre soil that is really segregated. And this is like one step from there to there, and you're looking at alfalfa that's that tall, versus much shorter, of course. But in this case, why it's so obvious is because we have this sodic collapse on this montmorilonitic clay.

And that's a close-up of the same problem.

There you have the -- As always, border dikes are difficult to get a stand on, because these dikes are probably a foot high, and these fields are terrace level, because we have this poor quality soil, so we don't level the fields as a pool table, as a terrace level. This here is level going across here, and you hit the dikes, and it goes up and it drops, then it comes a few tenths below this flat area here. So there is basically a terrace leveled system that we've got on our fields.

And of course, we didn't get a stand on the dikes in this particular spot because we didn't get water, and we didn't get rain when we planted it, but this green area was less impacted by the water, and didn't get up -- this is just high enough that it didn't get up, seeped over to irrigate the plant below the surface, and that's why you have this green and much better quality plants, and you can see it all the way across the field, the green border dikes.

And there it is again. That is a real bad spot. And what do you do with it? Alfalfa

plants are toxic to themselves. You have a difficult time to go in and replant and ever get it to come up. The plants will sprout, and then they'll die. And just the only way you deal with this is you determine how many tons you're satisfied with taking off of this decrepit, damaged sand, and then you go in there how many years they survive, and then you take it out of production, and go back, move back into the rotation.

And that's a close up of more of the same.

And you can really see the border dikes in this frame, the back and forth in this is pretty much across that whole devastated area in that field.

This is our yield. Now, you have these ups and downs at any given time. Now, how that those numbers are arrived at is the haying system that we had, we couldn't weigh the stacks, so we put in hay buster stacks 18 feet in diameter, and the machine is real tall, so we had no way of weighing them.

But we take our production. We market all of our alfalfa and grain products through our

pellet plant, so the amount of hay you have, based on how many acres we have in, is what it did for that particular year. You don't come to that number until the following spring because all of the product goes off the farm over a scale.

So you get this ups and downs, and you can see on these field size, you don't keep the same exact amount of hay in production. You tear up the whole field, whether it's 20 acres or 140 acres, and so you can have some fluctuations, and that's probably what something like this represents right in here. A bigger field is tore up in there, created a drop, and then another field came back into production, and start pulling itself back up.

Well, as the years went on, we started this decline, and we've got down to there. This here, my brother can do this stuff, but he wasn't available to get the years before that. But we were up. At one time, we were dancing around, just like this, only it was a seven. And our farming practices have improved, and yet we're still plagued with this.

This slide here, this frame, is what it costs us. Our annual loss on that four point

something tons is about an 1,800 ton loss, and we're having to replace that hay to go into our feed plant, and it's about $125 a ton, so about a $226,000 loss on hay production every year at that four something ton range.

And we've tried everything under the sun. We've bought $95,000 worth of new equipment, two implements, a disc ripper that was like $48,000; a roller harrow to try to break the lumps up, a big one that did -- The disc ripper is only 16 feet wide. To deal with this collapsed soil and the rate of horsepower that it takes to pull an implement through there, we've had to put two tractors on it, so we're looking at close to 600 horse on the front of a 16 foot implement, which is laughable, it is just unbelievable. And of course the costs of running two tractors, the fuel, and two operators, and the problems go on and on.

And then I'm going to move into the fish passage, fish passage on this -- This is the inlet, and you recognize that gentleman there. That's the Governor, and that's myself. That was on the opening day of the fish passage, and he came over, and opened one gate, and I opened the

other one, and that basically allowed the fish to get past the Tongue and Yellowstone Diversion Dam that had been blocked since 1886.

And that's the channel just below the gate is right up here. And this is Class 1 riprap. Dug the channel, put the dike, and it makes a curve, and goes back into the river below our diversion dam, and now the fish can travel up this stream, and enter back into the Tongue River, and go south, where they weren't able to go since 1886.

And the boulders are weir boulders. This thing was hugely problematic to get it here. Those rocks and the Class 1 riprap doesn't look like anything in the Miles City area. All of the rock in the Miles City area, except the granite that's moved down the river, is small size gravel, and is not weather proof. So we spent $120,000 on rocks and Class 1 riprap to line this thing with, and it came from the western part of the state, but we had to do it because we don't want these rocks to melt, like silt stone will. And then we did all this for virtually nothing.

This is what the diversion dam looks like looking south almost, southwest, and this is

where the fish enter the fish bypass channel, and go on up there to the head gate or the control gates, back into the river.

This is the inlet, and I don't know why I couldn't get my other pictures, and my brother couldn't get them on there. I can't do these, make Power Points, but my brother can, and other folks, but I'm not quite there yet. But anyway, I would have liked to have a picture of the rest of it.

This is the new structure. We put in trash racks there. There is a sand line. The sheet piling wall is cut out, and goes under the water to the other side, so it creates a barrier wall that the water has to flow over the top of it, and it inadvertently takes the silt, and doesn't let it over that wall. It goes through this head gate right here, and bypasses it through a pipeline to the lower side of the diversion dam.

And then back down here, just starting about right there, there is 90 feet -- this is about 120 feet long, this big huge concrete trough. There's a louver system that goes from the left side to the right side. And it's like if you took that venetian blind and stretched it out,

put it on edge, only the gap would be an inch, and the blind things would be two and a half inches wide, with an inch gap in it, and it creates a little back board 90 feet long, and the fish, it scares them away. They crowd to the other side, and they move down as the water way, and are bypassed into the river below the --

I guess that's all. I wanted to have other pictures on there, but it's really pretty cool. The sand line, I had one on there that showed the sand line discharging into the river below the dam, and then the fish bypass channel that bypasses the fish back into the river. Anyway, that's where we're at.

CHAIRMAN TYLER: Thank, you Roger. Questions? Comments?

MR. SELCH: Roger, Trevor Selch. I was just looking at some of your conductivity measurements, and I understand, I think the most critical thing is to try and link any kind of discharge with an increase in conductivity. I know we did a bunch of bicarbonate experiments, and that can obviously be somewhat related with conductivity.

Just because they're natural prairie

streams, the background levels are going to be fairly high, and if you have any kind of a rain event that will pulse up that conductivity fairly rapidly, and so I think it's hard to -- that's going to be the hardest challenge is to try and tease out what's not and that --

MR. MUGGLI: That's right. You're absolutely right. My stance on it is we can carve these numbers, how we decide, and the Board of Environmental Review -- And as all of you know, we had all these meetings until we were blue in the face, and through it all, it became a play as to, "What are you guys as irrigators willing to allow into the river?" And the other side is, "What are we going to get to be able to discharge to the river?"

The field, you know, the field you saw in there with the odd lines across it, we never stopped to take and see what is it going to take on a field with that type of montmorilonitic clay. It was all a numbers game. Someone needed to take that same soil and say, "This is how much water we can stand." She's right on the threshold.

It was like back to the conversation my dad and my grandfather had. How much bad water

can we take before we start seeing this clay soil go plumb to heck on us? How are we going to do this?

We have an interesting field that we have further over east of the field that I showed you that had the odd lines across it. It would be about half a mile, three-quarters of a mile to the east. We used to farm it, and we used to farm it with terraced dikes because the soil was so poor that we had very little top soil to deal with. So we decided that instead of having straight line 100 foot borders, we had these terraces based on the contour of the land.

And it was 168 acres in this farm. And so we started irrigating it, and we noticed that if we irrigated, ran into these dikes, and we had drains in them and all that, we could make this work. But if you got it when the river was low, the only time you could irrigate it was when the river was high, and then it started dropping, and it takes 24 hours to get the water from the top end down to where the head gate out of the canal is. Then we would irrigate this field, and it would be -- After you'd wait a long enough time, until this water passed in the canal, then you

could get by irrigating.

So then we decided let's see what happens, and we'll just irrigate it when we think it's dry, so we started doing that, and it's just clay from hell. It's just absolutely awful stuff. Then we started seeing it collapse. And it was just such a monumental mess, we just gave it up. We quit doing it, quit farming it.

Some of you are thinking, "Why don't you guys just stop farming where you're at entirely?" That's probably what we should have done forty or fifty years ago, but having an operation like ours that involves a 20,000 ton a year feed processing plant -- and I think we're probably almost the largest feed processor in the state. Our farm is there. All of our production, grain production goes through this feed plant. We buy a lot more hay and a lot more grain products.

And you just can't -- it isn't like selling your house and moving on. It just isn't. And where we're going to go, I dare say. But the bottom line is that we can't incrementally, with this soil the way it is, and that's where the whole flaw in this is we couldn't -- we shouldn't have never dealt away good quality water, not

knowing how much of this water 80 percent montmorilonitic clay would tolerate.

That's where the problem came, and we found that out in the worst sort of way, that it was a very small amount, because you're looking at an SAR of maybe a point and a half, is all you are. The water that's discharged in Montana is like an SAR of 60. Well, it doesn't take much of that water to start raising it incrementally, and that is what's got us into trouble. That really is.

And the thing of it is, you need to know that our operation -- we don't live in a tent by the river with no electricity. Our electrical bill in that feed plant -- so we're not hard core environmentalists -- but our electrical bill in our feed plant could be $12,000, $13,000 a month to run this, because we're taking about 900 horse off the grid. Well, that's a lot of money.

Then we have diesel fuel for our trucks, for our delivery service. One truck can burn $10,000 worth of fuel a month, and we've got five trucks.

So I want folks to know I'm not some wacko, what we'd call "greeny" that doesn't want

any development. I'm just begging everybody. Let's not throw the baby out with the bath water. It is as simple as that. Our parameters for what's going on are not good enough. We need to not -- like grandpa and my dad said. "How much bad water can we take in this thing?" They didn't even know. They were dead a long time before CBM came along. "How much bad water can we take? What can happen here that will put us out of business with that terrible crappy soil we have?"

MR. SALLEY: What's the standard treatment for the CBM, for the water? How do you treat it?

MR. MUGGLI: Well, my favorite is one thing, one word: Reinjection. And then you save the aquifer. You keep it intact. The ranching community isn't going to worry about wells going dry. The industry talks about the recharge this and that. I'm just saying if you put the water back down in these wells, we don't have to worry about any of that.

That's a huge problem for our operation. What if all of a sudden these ranches decide they don't have enough water in these wells in places? Maybe they collapse some place. The strata goes

to heck. A lot of these people were selling feed over there. So then where does my business go there from a practical standpoint? So there is all these domino theory things that can happen to us as a result of our poor decision to allow the wasting of this water.

CHAIRMAN TYLER: I have a question, Roger. Do you rotate through small grains?

MR. MUGGLI: Yes.

CHAIRMAN TYLER: What do the oats look like?

MR. MUGGLI: I'm glad you mentioned that. We rotate with barley. We went to barley primarily because it will stand -- it's more salt tolerant than anything else that you can rotate with, which is oats, or wheat. Barley is it. Barley stands the most sodic water.

And we had -- believe it or not on this crappy soil, we have from 95 to 110 bushel average on barley. And now last year, on several different fields, our barley was 45 bushels. And we had a very mild year. It wasn't too hot. We got it in early. We just can't make it work. We just cannot make it work.

So one of the things that we've done --

and see, this is the thing about it. The book part of all this is that barley is the one that you should be able to rotate with, according to all the smart people, that it is the most salt tolerant. So we went, jumped in there last year, and planted corn, because we're running low on organic matter in this clay soil. So the best way to get organic matter in there is grow it.

How do you grow it? You plant field corn on it, and then harvest it, and we can use the field to -- harvest the corn for our feed plant on three-eighths horse calf pellet, and put all of the stalks back in the ground, work them into that clay soil, so you start to increase that percolation. So you move that percolation on down there. And we're sort of out to lunch on it yet.

But here is the bizarre thing about it, is on these fields, we did two fields, 103 fields, 120 acres, and this corn -- this is just shocking -- made around 205 bushels to the acre. It was just staggering. But you could see it. It was so strange to look at that soil out there and see that when it goes into these bad spots, how that corn plants reacted, but it was by the virtue of the brace roots would start going into the ground,

and it would literally fracture that ground.

So corn isn't supposed to be something that you can raise when you have this kind of soil, and you have this water impact, so go figure. But anyway, our upside is that hopefully we can put all these stalks back into the ground, and get it tilled in with all these fancy new tillage equipment we have, and increase our percolation, so we can move this sodic event down out of the root profile.

CHAIRMAN TYLER: Other questions for Roger?

(No response)

CHAIRMAN TYLER: Thank you, Roger. Shall we take a lunch break.

(Lunch recess taken)

CHAIRMAN TYLER: We're at 15 after. We said we'd restart. Let's call the meeting back to order. We do have a quorum. Staff asked if they could maybe make a couple comments based on Roger's testimony prior to Hydrosolutions' presentation. Bob, do you want to give us a quick update.

MR. BUKANTIS: I just felt like we needed to address a couple things, Roger, just to

clarify a couple issues, and I think I'll just try to explain the basics of water quality standards just real briefly a little bit.

Because like, for example, on the Tongue River, we've got water quality standards that are set at the level necessary, or what was deemed necessary to protect the designated uses. And when you see those standards that are sometimes exceeded in the stream, that doesn't necessarily trigger an enforcement action because sometimes they may be exceeded naturally.

And in the case of the Tongue River, for example, we know that sometimes those standards are exceeded down at the lower end of the river; but I'd say our information is showing us that Fidelity, for example, is in compliance with their permit limits, and we're not seeing the standards being exceeded at the border. So we don't see any opportunity or any duty, if you would, to perform an enforcement action there unless we can see something to go after, because an exceedence in the surface water doesn't trigger a duty to go after an enforcement action. So I just wanted to clarify that.

And the other thing is part of the

standards, if you would, is the nondeg numbers, but those nondeg numbers are really not meant to be numbers that you use to evaluate surface waters. Those are numbers that we use when we're setting permit limits to protect high quality water that exists in the Tongue, particularly the upper end of the Tongue River, and so there is no enforcement trigger there either.

And actually that kind of begs the question a little bit about the TMDL, because generally we write -- well, I'd say more than generally, especially given the workload in this Department. We always write TMDL's for waters that are impaired.

So if you look at the Tongue, particularly the upper end of the Tongue, that water is in pretty good shape, and that's why we used those anti-degradation numbers and permits to protect that high quality water, but there is no need to write a TMDL for that water.

So I just wanted to clarify those points, just to try to get our position straight on the record on that, and then just perhaps pass it to Jenny to address some of the permitting issues.

MS. CHAMBERS: Jenny Chambers. Just really quick, I just want to clarify that Roger indicated that methane wastewater is considered a pollutant under the Clean Water Act. Any discharge of waste water is a pollutant under the Clean Water Act. You can't discharge to surface water without permit coverage.

An MPDES permit is basically the ability to discharge a certain level of pollution. That's the point of a discharge permit, is authorizing the discharge of a wastewater. So in my mind, it's always been considered a pollutant just similar to a POTW, a Public Owned Treatment Works, as a waste water, and there is a certain amount of pollutants in it, and then the permit limit is protective of the use.

So there is two different requirements. We first establish technology based effluent limits, or TBELs. In this case for coal bed methane, we use the BPJ method, and the treatment that they actually have at Fidelity is an ion exchange, and that's looking at the best available control technology using the BPJ method that also brings in economics and cost, so what's economically feasible based upon the operations,

what level of treatment is the best that they could achieve.

We looked at other treatment options as well: Reverse osmosis; reinjection, like Roger mentions; a whole slew of different options that were available; and ion exchange Higgins Loop was the most cost effective or economical, best available treatment for that industry that consistently can meet a certain level of performance.

So it takes that analysis, and establish technology based effluent limits, and then when those aren't stringent enough to be protective of the uses, we also then look at water quality standards, look at reasonable potential for the discharge, see if any of those -- any of their discharge constituents would exceed water quality standards, and then we apply the most stringent, and that's the permit limit they have to meet.

So it's kind of a two fold process: Treatment, performance, and then what's the water quality standards from Bob's shop, and then we apply a number to be protective of that.

Like Bob indicated, TMDLs. At some point we have to look at is there also a TMDL

based upon establishing permit limits? Has there already been established waste water allocation that that stream can hold in order to make that impairment no longer impaired.

And the Tongue River where Fidelity discharges is high quality water, so there's no impairment, so we're just trying to hold that so it doesn't become impaired. If the Powder is impaired, if there is any coal bed methane discharge on the Powder, then it would be beneficial to have a TMDL like Roger indicated so that we would know in the permit shop at least what that load allocation should be.

The other note that was mentioned was nondegradation. Why did the permit not establish nondeg in the renewal of that reissuance of that permit? We did in the previous permits, and this is a reissuance of that permit at Fidelity, did not have a new or increased source or increased load, and so therefore we didn't take a stringent number below what they are already at. Nondeg applies to newer increased sources that discharge to high quality waters.

So those are kind of the high level notes, and there was other stuff on there that

referenced Department and different actions. So we'd be happy to answer any questions if there is additional clarification that needs to be done on any other topics.

CHAIRMAN TYLER: Thank you, Jenny. So it's time for the Hydrosolutions Tongue River information program, except is Tom or Neal going to lead this?

MR. OSBORNE: I'll do an intro, and then Neal will take over.

Chairman Tyler, ladies and gentlemen, thank you for having us here for this presentation. My name is Tom Osborne. I'm President of Hydrosolutions, Inc. we're a small hydrological and environmental consulting business. I'm in Billings, and we also have a Helena office.

So I started my career in 1976 doing coal hydrology in southeastern Montana, and so a little math will indicate that I'm kind of getting to be an old guy in this business, 35 years experience in the state of Montana doing water quality and hydrology studies. So one way or another, I've probably always been involved in the water quality and hydrology of coal related

projects in Montana, so this is kind of a continuation of that.

This study is an excellent demonstration of commitment by the State of Montana to conduct a long term research study of water quality and hydrology in the Tongue River that is enabling the continued co-existence of two very critical industries in the state, and that being agriculture and energy, and I guess that's how I see the contribution that this project is making. And I will conduct the hydrology portion of it, but we usually lead it off with Neal Fehringer, a certified professional agronomist, who is going to talk to you about the crops and the soils aspect of this study. So Neal.

MR. FEHRINGER: Thanks, Tom. A little bit about myself. I grew up on a farm in northeast Colorado. My brothers still farm. And I started my business 30 years ago this year. I have been, as Tom mentioned, I'm a certified professional agronomist with the American Society of Agronomy. I'm also a certified crop advisor. I work with a number of farmers, mostly in south central and southeastern Montana, on crop production; do expert witness work.

And what I've found in expert witness work is sometimes we look at a situation and try to figure out what is the cause, and quantify it. Roger alluded to the most obvious animal. Well, sometimes what I have to do as a scientist is look at all the animals, and see what is the cause.

For instance a number of years ago, a farmer at Circle had me come out because he wanted me to evaluate a case where he said 2,4-D was causing injury to -- or reduced the stands. He just knew for certain that the 2,4-D he put on before he planted the barley caused stand loss. Well, in my evaluation that day on his property, it came to be where he banded too much urea fertilizer with the seed on wide row spacing.

So as a scientist, we have to go in and look at all of the animals, and then let the data speak for itself. And so today, we're going to present this data. Originally you can see the logo up there, AMPP, stands for Agronomic Monitoring and Production Program. It began in the fall of 2003 with myself and two soil scientists. So I have been involved since 2003. And it came out of the concerns that Roger has and some other people.

I'm not going to read the slides. I assume you guys can read them. We're going to get to 30 slides in a little bit of time here, so Tom still has time.

Roger showed some data today from USGS, so they've been studying the waters, more -- stepped up the studying of the water, particularly once the CBM water started going into the Tongue River, which began in 1999, but there was nothing for soils and crops, and so that's where this came out of.

We have 13 cooperators in the program at this point in time that irrigate with water out of the Tongue River. So we did baseline sampling, fall of 2003, soil sampling, to identify a whole host of things, so we're going to discuss some of those today. Ideally if we had gotten started in 1999, that would have been the true baseline, but this is where we're beginning. And what we've done is by soil sampling every year, and taking forage harvests every year, we are able to look at trends, and then are trends occurring out there. So then we've done it on an annual basis in a systematic way.

My two soil scientist, Kevin Harvey, and

Bill Shafer, and myself designed this program in a matter of ten months. For full disclosure, Fidelity Exploration and Production provided the money for three years to run the program. We had total control. It was a matter of -- we would have liked to have State funding right from the beginning, but that would have taken a couple more years to get the funding, and etc. So they funded it through October of 2006, and now we're funded by the Montana Board of Oil and Gas, which is an agency of the DNRC.

The program has not changed other than we added a hydrology portion in October 2006, and so who pays this is the same, but we're doing exactly the same science as we did from the beginning.

Because it was funded by Fidelity at the beginning, we put out a sampling and analysis plan, as it's called; sent it to a number of agency personnel, like people from Montana Salinity Control Association, NRCS, experiment station superintendents, retired NRCS soil scientists, and they gave us some feedback. And if we had been -- we wanted everything above the board. Nothing -- Everything has been available.

And I'll explain to you how we handle the soil samples, that they're put on the website before we ever see them, and that's been from the beginning. But we did get a couple good comments back, and one of them was: Have a couple fields outside the Tongue River drainage as benchmarks. And I said, the data is available via the web.

There are three facets to this program. Agronomic sampling. Those were kind of courtesy samples to our cooperators. We go just zero to six and six to 24 inches. So soil sampling, just what you would normally do for fertilizer recommendations.

Today we're going to focus on Tier 2, and the Tier 3, where we've got much more in-depth sampling in Tier 2. In Tier 3 is we have a place on a half acre. We've got 48 replications of testing different waters. And I'll explain that when we get to it. But it's what's called a complete -- a random complete block study using two different crops and four different waters.

So we start out with 14 locations along the Tongue River drainage, within the Tongue River drainage. We had two outside of the Tongue River drainage. Two of the 14 were dry land areas. We

wanted to see what it was, what conditions existed in soils that had not been irrigated.

In Tier 2 we sampled to eight feet instead of two. The sampling points are -- we have GPS way points ten to twelve in each field, and I'll show you a map that shows that. In the Tier 2, we also added exchangeable sodium percentage, which is ESP, and clay mineralogy.

So Roger brought up the thing about the mineralogy of the types of clays. There is basically three types of clays. One is montmorilonite smectite, as Roger referred to, the high shrink soil clay; there is kaolinate, and illite. Kaolinite and illite are not high shrink swell clays, so the sodium doesn't affect them as much.

This is the distribution of our cooperators. We started at the state line. We've got three above the reservoir. There is the reservoir. Then we've got two between Birney and Ashland. The "D" stands for dry land. We've got a site there. We've got one in Ashland, one at the Brandenberg Bridge, halfway between the Brandenberg Bridge and the Twelve Mile Dam. This is at about mile eleven, BA is; BC is two miles

south of Miles City; then YAA is northeast of Miles City, so it's near the end of the T&Y Ditch.

We've got a reference field. That's the R's, one at Fort Keough, and then we've got one at Hardin as well. And so Fort Keough takes its water out of the Yellowstone before the Tongue drops in. Of course, the BHA one takes their water out of the Bighorn. So no CBM water in there.

This is our GA site and GB, so this is irrigated, and the blue lines delineate between soils mapping units. All our points, we took the major soils mapping unit from NRCS publications. We stayed within that one map, and the side row goes up here as well. But here are locations. We did a soil pit right here where the red is at, and then we've got it distributed throughout.

Then we took -- This is the same soils mapping. As you can see, this is range land over here, so we wanted to see what it was. And what we found, the major thing, soil characteristic, was the salts were much higher here closer to the surface than here where it's been irrigated for a number of years. They moved the salts lower. So irrigation in itself has made changes.

We want a paper trail. This is a form I designed. It's essentially the soil sampling information. So every fall before we soil sample, I ask -- This is general information up here about which irrigation water source it is, and do you have any problems. This is -- Like for instance last fall for 2010, I filled out this section. I wanted to know what crop was in there, what they thought it yielded; seeding dates, if they had seeded it; did they soil test.

And of course our cooperators soil tested anyway because we've been taking the soil tests. They put on fertilizer amendments, herbicides, insecticides. It's a full agronomic screening, is what it is. How much water they put on, when they started the pivot, when they ended. We wanted to how many inches they applied throughout the year. And then we do a little -- I do some planning with them.

The key to this form is I sign it as the agronomist, and I have the grower sign. So I can take this information. They've acknowledged to me that this information is true and accurate. And so then I give them two copies -- these are three part forms, and I keep the one they have signed,

and so I've done this each fall -- that I'm not making up information on myself for putting on summary sheets.

Every time when the field, whether it for crop harvest or soil sampling, I fill out one of these, so this is just general crop condition that's out there. I am the one that signs it only because I'm the one making observations. I could make recommendations on here, such as weed control, insect control, disease control, when they need to start the irrigation. This is what I do normally in my consulting business when I work with farmers. So say what the crop condition is, if there is any problems out there.

So we've sampled fall of 2003, spring and fall 2004, and then fall of 2005 through 2010. We did the sampling the next spring after we started the program, but we found it wasn't necessary, it was just extra cost, so we quit doing that in the spring. So we've had nine sampling events since 2003.

We've taken almost 900 soil samples in that period of time and, they're all -- And those GPS way points, we go back in to soil sample, we take and go back to those sites; and I generally

would go to the field, I will then relocate those GPS points, put a flag in. They came and soil sample those spots. And there will be -- If a field hasn't been worked, such as perennial hay, I've been able to relocate probably three out of ten really easily in those points, so where we're real close to our old points.

Clay percentage, I'll show a slide of that; salinity and leaching fraction, we'll see that; and sodicity and permeability, I'll talk about that.

Here is our first site, which is MA. We gave them an Alpha name, because this was contentious enough when we started the program, to protect the innocence -- or to protect the innocence of the cooperators. We didn't want them getting something from the Ted Kaczynski mail order catalogue via some people that didn't want them to be cooperating.

So this is MA, and this one down here is YAA, which is beyond Miles City. There is 157 river miles from essentially state line to where the Tongue River drops into the river, into the Yellowstone River. So here is the percent clays as you go down the river, and this is our trend

line.

So this is the site that is two miles south of Miles City. It has got 43 percent clay. And we've got -- So essentially a lot of the soils that are within the Tongue River drainage are considered loams. We increased about 3 percent from the top to the bottom, so it is -- There are out in Roger's neighborhood -- which this gentleman is beyond where Roger takes water out for his field -- it can be really heavy clay. So his particular site is not.

But the one that's got 40 some percent clay is there. What we found is the higher the clay, the lower the percentage of the montmorilonite. So if you had the one that had say 45 percent, it had maybe 10 percent of its clays, total clays content, was montmorilonite; but if you take the one that was about 18 percent, then the montmorilonite was much higher, like 25 percent. So there seemed to be a kind of consistent montmorilonite content from top to bottom of the drainage where we're studying.

So we've seen differences between locations due to management of the soil; we've seen no significant change in the soil EC. SAR

and ESP values have varied, and I'll show you some ESP things.

SAR and ESP, I'll show you how that is tracked. Very similar. The ESP is sodic soils considered of 15 percent sodium. If the ESP is 15 percent or higher it's sodic, whereas SAR it's twelve. So they're very similar numbers. ESP is easier to average, so I like to use the ESP rather than SAR.

I'll show you fields that we've kept -- Sodium, we've tracked the sodium content from those fields for multiple years, and I'll show you the sodium contents and how they really -- we have not seen any increase. It does vary between crops. Of course, we monitor annually.

We had six fields that -- This is EC, and this is inches in depth. So generally the trend was -- This is from spring 2004, but we had six of them where EC increased with depth. Then we had six that maximum EC occurred at about 30 inches from the depth. And we had perched water table here, and so it decreased with depth. You couldn't leach it really any deeper than this.

Then this is a little bit hard to see because of the colors, but then we had a couple

where salinity really didn't increase with depth at all.

Here is upper river exchangeable sodium percentage, multiple years. It would be 2003 through 2006. You could see it changes. It tracks pretty well, but it does change from year to year.

Here is lower exchangeable percentage. This is a site that's eleven miles south of Miles City, and again, it tracks. This one right here is from 2005, and I'll show you on our ESP graph why that one was lowest.

Here is average exchangeable percentage all depths. I've split them out into all 14 irrigated fields, the ten within the Tongue River drainage, and the two non-Tongue River fields. So as you can see, it varies. The sodium goes in and comes out.

In 2004, we reached our peak. It certainly has approached that point. This was 2010 data, and I was entering it the other day to get this graph. There may be some issues that we may have to some retesting done by Energy Laboratories.

All soil samples that we have taken have

been analyzed by Energy Laboratories here in Helena, and there is a strict protocol as far as chain of custody. They get them and then work on them.

But this is fall 2004, and then this dropped like a rock, so a significant change in exchangeable sodium percentage. It came from the fact that in the spring of 2005, the Tongue River Reservoir, I believe, was about half full, and it filled within six weeks due to spring precipitation. So we had irrigation water that had higher EC's and SAR's, and ESP's -- or SAR's. You can't read ESP's on water. But we had all that runoff that translated into flushing it out of the system. Then it came back up as we had some more dry years.

Tom is going to allude to the -- One thing that wasn't mentioned here earlier was that southeastern Montana had a drought beginning in about 1999 or 2000. So river flows went down, EC's and SAR's went up. It is just the nature of the beast.

So right now, we're not where we were in 2004. That's the data. We're here to present the data. So whatever it means. But as we continue

to do it, we'll continue to lengthen out this graph.

Here is this zero to two exchangeable sodium percentage. So Roger talked about how his soils get this dispersion, or collapse, is what it is. Sodium, the old adage is sodium makes water soft. If you have hard water, you add sodium to a softener, and so it makes water soft, but soil hard.

Now, if we're getting a sodium accumulation in the soil, it's going to be at the zero to two inches, because it's going to cause that collapse or dispersion of the soil. And so we have been tracking the zero to two ESP. And so you can see that since we started we've actually gone down. These, this primary -- these peaks, this is the non-Tongue River fields. This is due to -- These first two are after plowing sugar beets. Exchangeable sodium percentage in the top two inches just goes way high.

Then the next two years is small grains, and this is from the BHA field that's driving this, as average those two together. And they had a lot of rainfall before we soil sampled next in 2009 when we had the beets in, so we didn't get

that peak. But that's caused by cropping. Not anything to do with CBM, because it's above CBM discharge.

Here is ESP, which is the upper line, and SAR, and how they've tracked. So SAR's will have done virtually the same.

So that's the soils part. We have not seen really the substantial increase in ESP or SAR that would cause this. This is -- I said the different crops take up a different amount of sodium. Corn always, regardless of what's in the soil, comes in at .02 percent sodium. We had fields that are high, test high in sodium, and it still comes in at .02 percent and low -- fields with low percentage.

Grass doesn't -- the species of grass which we have there is brome, orchard grass, don't take up as much sodium as alfalfa does. Hay millet takes up more than that. And of course, Roger talked about barley being salt tolerant. And it takes up more sodium, and yet still produces.

This one, I'm going to take a little time here. These in this group are all within the Tongue River drainage. The YBA is Fort Keough, so

I separated it off to the side. This is the average sodium contents from the forage. And what the criteria to make this graph was it had to be of the same crop. As you can see it, if I went from grass to barley, and then put it on the thing, my barley content would be really high.

At Fort Keough in 2005, they had the field that we were studying in barley, and then they under seeded to alfalfa. So the first harvest we took off was 99 percent plus barley. Then the second harvest we took that year was alfalfa. And the sodium content in that same field, the same year, two different crops, the barley was .57 percent, and this graph starts at .2, so it was over .57 percent; and the alfalfa was at about less than .3. So they had the same water that year, runoff water, and etc., so we have to separate the crops.

This field is near -- MA is above the reservoir. The trend has been down. This field is also above the reservoir, LA, and it is downsteam from all of Fidelity's untreated discharge points they had. And yet the cooperator says sometimes there wasn't for this untreated discharge prior to when they could discharge

untreated, that if it hadn't been for the CBM water, they wouldn't have had enough water to irrigate with. And so we've leveled out at .02 percent.

This is between the Tongue River Reservoir, between Birney and Ashland, and the trend has been down. This is an unirrigated field in Ashland, and yet it is very similar to this one. It's grass as well.

This is at the Brandenberg Bridge. We had one cutting, the third cutting one year that made that spike up, but this is just -- I haven't seen any increase in sodium.

DB is between Brandenberg Bridge and the Twelve Mile Dam. We see a little bit of an increase there.

This one is two miles south of Miles City, and so that one has been -- we're at or below where we started.

This one is beyond where Roger farms, and the trend has been down in the forage.

And this one is Fort Keough, and it seems very similar. That's the Yellowstone River water there, and this is T&Y water, this is T&Y water as well.

If you put something on -- and I'll show you in my test plot data that plants are going to pick it up.

So this is from our test plots, and there is a lot of numbers here. This is the water, and this is the percentage that is Tongue River water. So we have two 17,000 gallon frack tanks sitting there. One is for Tongue River water, and it is above any of Fidelity's discharge points of the untreated water; and then the other one holds CBM water.

We have a manifold system. So we have four waters, we have two methods of irrigation flood and sprinkler, so we have fewer applications of each, and we have two crops. If you multiply those out, you've got 48 replications on a half acre. Each plot is -- The flood are about eight by 22 feet, and the sprinkler is 15 by 30.

So we've got 100 percent Tongue River; we've got 93 percent Tongue River, 7 percent CBM; 85/15 and 50/50. What's interesting is there was the thing about -- this morning I believe Roger talked about numerical standards that were set for the Tongue River. The 85/15 blend is just a little bit below those numbers. When we take a

CBM water that has an SAR of 52, and the Tongue River which is a little bit less than one, and put them together, 85/15, we have an SAR of like 2.7; and the numerical standard during the irrigation season was three, so we're below that.

Our 50/50 blend, you'd think, well, the SAR should be 26 if you have one, an SAR of one that you're blending with an SAR of 52; but the SAR equation in the denominator part has -- you have to take the square root of the average concentration of magnesium and calcium, and by that square root, when you mix water such as I've talked about, 50/50, the SAR is little over 12. You don't blend it together.

Now, conductivities, the specific conductance, is a straight average, but SARs are not, and so that's the real key there.

This 93 percent has an SAR of about 1.7, which is up from around .8, .9, so it's a little bit of water. It doesn't go up.

Now, the numbers, these -- Everything we have here, we've got yield crude protein, percent acid detergent fiber, which is just the non-digestible parts; TDN, which is total digestible nutrients; and then percent sodium.

None of these that are in yellow, that forage information, none of those are significant.

But you look over here, this is the first year of hay barley, and as we put the extra sodium on, you can see it went from .1 to .31, more than double. So what you put on that, whether it's fertilizer, sodium, nitrogen, whatever, it ends up going into the plant.

Now, 7 percent, that is not significant. There is a numerical change of .11 to .12, but it takes at least 15 percent to get to where we're significant.

Here is the next year, hay barley as well, and we've seen this in alfalfa as well, that again, it more than doubles. Here we have a change of from .16 to .17, which is not significant. From 100 percent to 93 percent. 85/15. We do get a significant increase in sodium in the crops.

And there was a point I was going to make. It's like a sneeze that escapes. Maybe I'll think of it later.

Since we've had State funding, the Montana Board of Oil and Gas Commission website has our reports there. Our full report is like

280 pages. It describes everything we've done. We've updated that every year. We have, in executive summary there, we've put the brochure there; which we didn't get that updated from two years ago, but you have copies of my slides that would update it.

So the other thing is all the soil test results are posted to Energy Lab's website. They send them to me first, because I do fertilizer recommendations, and then I want to meet with the cooperators in the spring and go over their soil tests. I put pH, SAR, soil conductivity, ESP, and texture on sheets, that for each one of these sites we've got them listed by year, so we can track what happens, and easily see that from year to year, how it's changed. They put them on the website before I see it. And then the 2003 to 2010s are there.

So here is the Energy Lab's website. Here is the AMPP logo. You click on that. We also have another similar study going on Prairie Dog Creek, which is by Sheridan, Wyoming. And so those are posted there as well. This is the AMPP data. Here is all the sites listed. This WAA is actually just a Tier 1 site. It doesn't have the

input sampling.

So you click on one of these, and you click YAA, which is northeast of Miles City. Here is all the sampling data that is there, that you can go in and download all that.

The summary. So we've seen differences in EC and SAR between fields. THe key to this program is we are regular and systematic. I talked to some people, encouraged them to be cooperators back in 2003. Roger was one of them. I met with you, what, probably three times, twice or three times, encouraged you to be a cooperator. He chose not to.

We have come -- and those people said, "We've soil sampled this year," and the last time I checked with any of those people -- not specifically with Roger. Roger had a retired soil scientist that T&Y did, had some testing done -- but those other people that are up river, they had soil sample done. The last time I checked with them, they haven't done any sampling since, and we have sampled nine time in ten years.

So we are regular and systematic. We do the GPS way points. This is a scientific project, and so it is essential to credibility.

So the characteristics of the irrigated soils reflect what the water source is and the irrigation management. I did read this bullet point. As you can see, those graphs that I showed, the three styles, where the EC increased with depth, where it maxed out at 30 inches, and then it really didn't change with depth, that reflects soil characteristics. Water source is pretty much all the same.

The irrigation management. I had a gentleman that went from hour sets with side rolls to 24 hour sets. What it did is now his peak EC moved from twelve to 24 inches down to 24 to 36 inches, because just changing -- doubling his set time, how long he let the water run.

We have not seen any impairments due to SAR's, including soils beyond Roger, and we can -- we'll have future -- we're going to continue this program to see.

Some questions I had as Roger was speaking, some of the things that he did not cover was -- First of all, I noticed one thing on the these photos. They were dated October 15th of 2006, the ones that showed the wilting. It's probably indication of late watering. What it

showed in there was there was too much water. As whether it was the CBM, the border dikes looked better. Not because of the CBM. Most likely water got up on the border dike, but just the fact that there was more oxygen in the soil.

If you over water, it's going to look like that every time. I've seen alfalfa like that where water stands, it dies in that same manner. So as to whether it is CBM or water, or if it is just water at all. You could have same the effects with holy water versus CBM water if you over water.

How old was that stand? The real key is alfalfa in heavy soils will develop phytophora root rot, and is caused from water logged soils. And if you've had a short rotation between stands of alfalfa, as Roger mentioned, there was some phytotoxicity between the existing alfalfa and the next alfalfa crop. Well, if there is not two growing seasons in between, you can end up with that disease real easily, if things go adversely against you.

Something he mentioned was the corn grew fine. I did test plots for Stillwater Mining Company, where we put gypsum on sodic spots. Corn

in sodic spots grew this tall. Corn, where we reclaimed it, but had the exact same conductivity, grew to be nine, ten feet tall. So we maintained the conductivity of the soil the same. All that changed was we decreased the sodium. And so corn just does not flat out grow where sodium is.

The other thing I noticed about the field in question was the field seemed to be worse at the top. Those were awfully long runs for irrigation, flood irrigation. I have farmers that would have probably had three cross stitches in there, so you get the water on the field, off the field.

So I'm not trying to pick on Roger, but this is just some things as an agronomist that I note.

I mentioned that -- and Tom will allude to this -- that in his hydrology study, that since 1960 -- is that correct, Tom -- 1961, he looked at state line and Miles City both. The five driest years, four of them have been since 2000.

So when a drought occurs, farmers irrigate more because you're not getting the precipitation. So if we run water more across the field, heavy soils, whether there is -- it can

cause -- just stands. A stand does not last even in, say, a loam or clay loam soil, much less a clay, does not last as long under flood irrigation as they do sprinklers, because you were sending all that water down that field. For the time being the water is on the field, you're voiding the soil of oxygen.

And that is a legume, and you have nodules on there, and those nodules need to have oxygen to carry on what they're doing. The plant needs oxygen. Legumes in general do not tolerate wet feet, is what it is.

So those are some things that I had noted. So I guess do we do questions at this point in time?

CHAIRMAN TYLER: Anybody have questions, for Neal?

MR. MUGGLI: You know that field, I irrigate that in three hours. I get that across that field in three hours.

MR. FEHRINGER: How long is the run, Roger?

MR. MUGGLI: 1,800 feet. I get it across in three hours. That was the next one.

MR. FEHRINGER: I would have a hard time

believing that, that it was three hours, 1,800 feet, on as flat as the soil is out there northeast of Miles City.

MR. MUGGLI: You know, Neal, this whole thing is getting to be kind of a credibility scene here. I resent the fact that you can sit there and shoot your mouth off about -- compare me to Kaczynski.

MR. FEHRINGER: I never mentioned Kaczynski, Roger.

MR. MUGGLI: Who the hell ever.

CHAIRMAN TYLER: Why don't we hold it, guys, and keep going with the presentation, and have our questions towards the end. Does anybody have more questions for Neal as per this particular study he's presenting?

MR. COMPTON: Neal, with respect to clay content, and I think what you were suggesting is that equally important to -- with respect to soil sensitivity to sodium, it is not only the clay content, it's the percentage of the smectitic clay content; isn't that right?

MR. FEHRINGER: Yes, according to research, that smectite type clays -- and this is from Jim Bauder's research at MSU -- that if you

have -- they will become impaired at SAR of six or above. If you take illite, it's around ten, and kaolinite will be at 16. Yes, that has been published and referenced in lot of papers.

MR. COMPTON: Thanks.

CHAIRMAN TYLER: Questions for Neal?

MR. MUGGLI: Well, we had the Suarez report. They took the soil sample from those areas, and that's the famous agronomy outfit in California. They said they'd be having damages in one and a half to two SAR. And they took that big sample down there and grew alfalfa in it, and simulated irrigation, simulated rain events.

Quite frankly I resent the fact that we're compared to some kind of a radical, because I've never been that way.

MR. FEHRINGER: I don't know who compared you to some radical, Roger. I'm just stating fact. I'm showing scientific data. I have a paper trail for eight years that we can do it, so --

MR. MUGGLI: Where did our yield go?

MR. FEHRINGER: Where did your yield go? There's other things. How many times have you watered since -- per year? When you've got

rainfall in the 1990s versus drought in the 2000's.

MR. MUGGLI: I pretty much do it on three irrigations the whole summer.

MR. FEHRINGER: If you had problem soils, why didn't you become a cooperator for us to check that soil?

MR. MUGGLI: Because we were in this jam to begin with Fidelity, and you were working for Fidelity. That's the bottom line.

CHAIRMAN TYLER: Roger, I know this is a tough topic for you, but let's keep going with the presentation here. Thank you, Neal.

MR. OSBORNE: Mr. Chairman, I'll do a time check before I'm starting.

CHAIRMAN TYLER: We're getting close. Can you wrap it up in ten or fifteen?

MR. OSBORNE: Just to point out that these are what reports look like that are posted as PDF files on the foregoing gas website. This is the AMPP report, the one that Neal was talking about.

And he also referred to this report, which is the Tier 3 study, which is the test plots. That's published in a separate report.

Then the hydrology study which I'm about to address is this report. So you'll find the various years. All three of these reports are -- The Tier 3 isn't published every year, but you'll find at least two of these for each year.

I'll talk about the hydrology of the Tongue River. There is a map of the basin. All these grade points are oil and gas wells. So here is where they're clustered in the basin. Bighorn Mountains here in Wyoming, Birney, Miles City. This is considered the lower basin, and the upper basin.

You see a map to show you the distribution of irrigated lands. Here is the state line, Sheridan, Tongue River. All of the red are irrigated lands. And you might be surprised to realize that along the Tongue River 77 percent of the irrigated land is in Wyoming, and 23 percent in Montana.

Typical pumped irrigation diversion from the river.

Here is a chart showing the number of coal bed natural gas wells in strictly the Tongue River Basin in both Montana and Wyoming. The red line is the total number of wells; the green line

the number in Montana, this line being the number in Wyoming. So we're at total around 3,000 wells that have been drilled in the basin. Not all are operating.

And you'll notice that there is an actual -- For the first time since coal bed natural gas operations started in the basin, between 2008 and 2009, there was a decline in the number of wells. And we're working on the 2010 report, and I think that will probably be fairly stable. There probably will not be any increase really in that number.

I mentioned that 3,000 wells; 71 percent of those wells are in Wyoming. The average rate of produced water in 2009 from a CBNG well in all of the Tongue River Basin was about a little over three gallons per minute. Total produced water in the whole basin was about 20.6 cubic feet per second on average.

What happens to that water? It's just a real brief snapshot of that. About 87 percent of all this produced water goes into impoundments, or was beneficially used or treated prior to discharge, and the remainder of 13 percent was untreated discharged directly to the Tongue River.

So all these, almost all of these impoundments are in Wyoming, and they're permitted by the Wyoming Department of Environmental Quality. They have monitoring around them, and they have reporting requirements for ground water quality.

Just looking at what is the chemical composition of coal bed methane waters, this is total dissolved solids, 568 to 2,000, medium of about 1,200; SAR's of eleven to 82, median about 46.

The water as it comes out of the wells is dominated by the sodium and bicarbonate components. This water is generally suitable for domestic use and livestock, and is used extensively of course throughout the basin, as you probably know. It's generally unsuitable for direct application to soils in its 100 percent raw state without treatment of either the soils or the water itself.

But I would say that a lot of coal bed natural gas produced water in Wyoming is managed with a process called managed irrigation, where the soils or the water are treated with amendments, and then the soils are monitored over time to make sure that the salts are in good

concentrations for crops. And of course in 2010, the act of Fidelity MPDES permit was requiring treatment to both reduce salinity and sodium.

So I think you're familiar with kind of where the coal bed natural gas outfalls are. Generally just above the Tongue River Reservoir in this area. And this chart just shows some of the other -- Coal bed natural gas isn't of course the only influence on the quality of water in the river. There is quite a lot of other human caused influences. There is big urban center in the basin at Sheridan, right? So they have a wastewater treatment plant. All wastewaters generally increase in sodium, and some, including domestic waste water, increase in salinity and sodium.

You have feed lot operations, and you have coal mining discharges, of five, six, seven cubic feet per second in this region; and you have irrigation return flows, some of which have been mapped and located on here. And all of those have a potential influence. And the natural factors. The Tongue River Basin isn't a really highly developed basin. It's intensively used. All the water is intensively used, but it's not

intensively industrialized. So the natural factors in the river play a big role in the quality of the water.

I want to take a look at this relationship between flow and quality. You cannot consider the quality of the Tongue River, or most any river, without considering what the flow is when the samples were taken. To make that point, I've kind of broke out just a small window of the data that might have raised the concern of somebody had they just taken a very narrow and cursory look at the data.

So here on the top chart, these are the -- this is a little piece of that graph I showed earlier from 1999 to 2006, where the number of coal bed natural gas wells in the Tongue River Basin was ramping up pretty markedly.

The lower chart is the median annual specific conductance of the Tongue River. So you take all of the data -- and this is below the Tongue River dam, so it would include all the coal bed natural gas discharges above it -- and again, the same years, 1997 to 2006. So the median specific conductance of the river at that station seemed a pretty -- with one exception seemed to

climb at the same time that the number of coal bed natural gas wells was also rising.

So you could put two and two together possibly and assume that was the cause. But you have to -- The science aspect of this, you have to look further. You have to look at the bigger picture.

So now here's an expanded time chart on the upper part from 1988 to 2010, so about twenty years of data. And in the blue, the blue line is the median discharge of the Tongue River below the dam, and the red dots in the line are the median specific conductance. So just a very simple representation of the flow and the quality in the river over this time span.

So here in these early years in the 1990s, we kind of see not a lot of variation in the kind of the status quo, maybe everybody would like to see; and we had a record discharge in the river in 1998 -- not record -- a high discharge actually. At the same time we see specific conductance dropping.

Then what did the river flows do? They dropped quite dramatically and steadily, and stayed low. And as Neal mentioned, we had the

driest years of record on the Tongue River occurred in the early 2000s, four of the driest years. The only other really dry year was 1961. And specific conductance climbed, just one year after another, maybe with one little exception when the river popped back up.

And looking then beyond 2006 when the river returned to more normal flows, or even in some cases above normal flows, here is the river flow going up, specific conductance coming right back down.

So you have to look, whether it's yearly data or daily data, you have to combine and look at the quality with the discharge. So then if we take the same data, and we do a regression plot discharge on this access, which is expressed here in cubic meters per second, versus the salinity or EC, SAR -- excuse me -- the SC, you'll see that --

Here I broke it out on two time frames, the pre-coal bed natural gas over here, and the post-coal bed natural gas over here. It follows a pretty regular pattern, where as the river discharge increases this way, the median specific conductance goes down. And as the river discharge decreases, the specific conductance goes up.

Those were the years I had shown in the previous chart.

So some of the data that you'll find in the hydrology report for really every USGS station on the river are charts like this, which sort of break out the discharge -- this is a logarithmic scale -- and specific conductance for three periods, basically the pre-2000 water year prior to when coal bed natural gas started, the post-2000, and then the present year, the year that the report is actually written is shown in a separate color.

So we break these out so you can kind of see the scatter of points, again, relating to specific conductance to the discharge, and this is generally just made to give you a visual idea of what the data looked like. And generally, while I haven't tested it statistically, they're generally comparable. They're falling within the same range of discharge versus specific conductance.

We do the same type of chart for discharge versus SAR. So here again, an example on one of the charts is showing the distribution of data from all of the time periods available, broken out so that you see post-coal bed natural

gas development separately.

CHAIRMAN TYLER: Tom, I have a question, and maybe Roger can answer it, too. How many months of the year is the discharge only 100 CFS on the Tongue? Is it really that small a river?

MR. OSBORNE: That would be infrequent. The average is like in the 250 or so range.

CHAIRMAN TYLER: It looks like there is a lot of grouping down at the 100 CFS mark.

MR. OSBORNE: Again, these would be individual readings where we actually -- that SAR reading was taken, and the corresponding river reading at the time. So yes, there are times when it is that low. Again, this is a logarithmic scale, so 200 would be somewhere right in here. But yes, there are some very low readings on here. It's not the rule.

So here is a slide, just to put in perspective the amount of coal bed natural gas water being discharged to the river in 2009 again -- now, this is a couple years ago -- as a percent of the flow of the river, for the months of the year, for the months of 2009, January through December. This scale runs from zero to 5 percent. The red line is total coal bed natural gas

discharge treated plus untreated. The blue line is the untreated portion.

So in the irrigation season April to October, the total coal bed natural gas discharge treated plus untreated doesn't really exceed. Most of the time it's less than one percent. It never -- October, it was 2 percent of the flow of the river below the Tongue River Dam. And untreated water was generally always less than about a percent and a half, somewhere in that range.

MS. BUCKIN-SANCHEZ: Excuse me. You said that the untreated TDS is around 120 milligrams per liter, and what is the treated?

MR. OSBORNE: TDS of the treated versus untreated water?

MS. BUCKIN-SANCHEZ: Correct. What is the treated TDS?

MR. OSBORNE: Maybe you could answer that.

MR. OLSON: 400 to 500 milligrams per liter.

MR. OSBORNE: So this is just meant to kind of put in perspective the scale of coal bed natural gas discharges versus the flow of the

river.

Just turning attention away from our particular study to some other relevant information, I think, that I just haven't seen out there in the literature discussed. The EPA sponsored a water quality study of the Tongue River in 2007. They issued a report with some big appendices. And I thought it would be useful to just pull in their information.

They noted there were ten exceedences of the average monthly specific conductance water quality standard on the Tongue River at the Miles City station, and one at Birney; and I think one instantaneous exceedence. But there were no exceedences of the monthly SAR criteria for any station on the river during the period of time that they looked.

And these exceedences are again at the Miles City gauging station, which is 120, 150 miles downstream, river miles downstream, from the coal bed natural gas discharges. A lot happens in those miles. One of the things that, of course, happens is that this generally only occurs when the flows in the river are very low, when the flows at the Miles City gate are very low, and

that generally occurs in some of these drought years.

This is below where the T&Y Twelve Mile Dam takes out its share of river water for irrigation, so naturally there simply isn't much water left in the river, and we are talking about very low flows. So the only water that really remains in the river are -- there is discharge possibly from -- there is alluvial groundwater; there's discharge that comes down from Pumpkin Creek; and possibly a little bit of irrigation return flows; canal seepage.

All of those, because they have to seep through the natural soils of the area, they pick up salts, and so it's not surprising that you see some exceedences when you get to that amount of change in the flow of the river. But it cannot be related to coal bed natural gas in any way, because if it was, we would see these exceedences happening much closer to where coal bed natural gas actually discharges, and before it gets diluted by the river, which would be above the dam or immediately below the dam. You simply have not had any occurrences of exceedences at those stations.

This study went even farther. They said, "Okay. We have a few exceedences. Let's go run a model," and so the EPA's contractor put together a model that attempted to account for the increase in salinity in the river by two sources: Coal bed natural gas and irrigation. And I can't vouch for the quality of their study, but other than relate it to you as an independent source.

But they basically found that coal bed natural gas increased the salinity of the river from about 4 to 5 percent. They also found that irrigation increased the salinity of the river from 20 to 21 percent.

And it shouldn't come as a surprise, if you think back to the share, the very small share of the river, total river water that coal bed natural gas involves, and the relatively big water use that irrigation imposes on the river. The river has been affected by salinity from irrigation since the days in Egypt.

So that shouldn't come a big surprise. But it's good to see these kind of numbers, and I think it hopefully can bring us together on science a little bit better to see it coming from a study like ours, as well as a study that's

sponsored by EPA.

So that is just to summarize, SC and SAR are in the natural condition inversely correlated with flow, where you're going to see higher SC at lower flow naturally. Salinity and SAR after coal bed natural gas development began are comparable to predevelopment levels at all USGS gauging stations. We simply don't see significant differences.

And as Neal discussed, our studies in the TRIP project have shown that existing SC and SAR levels are not having detrimental effects on soils or crops.

Some acknowledgments. And of course, thanking our cooperating farmers and ranchers out there along the Tongue and the tributaries, and the Board of Oil and Gas for sponsoring us. And these are some websites. Recently we published an article in the Journal of Soil and Water Conservation that summarizes it, and you can access this site, and get the PDF article for free.

That's it.

CHAIRMAN TYLER: Thank you, Tom. Questions for Tom?

MS. LINDLIEF-HALL: Tom, I have a couple of questions. When you were talking about the human factors and CBM water, you used the microsiemens per centimeter for human factors, and this was in one of your last slides, and then you used a percentage, I think you said 4 to 5 percent for coal bed methane.

Can you tell me how those two correlate, the microsiemens per centimeter versus the percentage?

MR. OSBORNE: Well, the way I would -- I think they're kind of different, in the sense that the -- if I showed specific conductance with microsiemens per centimeter, that was the actual water chemistry measurement of the water at that time.

But the percentage referred to the actual -- just the flow part of it, just the percentage of flow in the river that the coal bed natural gas discharges are as percentage of the river flow for each month of 2009. So it was just percentage based on flow. It didn't have any water quality -- didn't apply to water quality.

MS. LINDLIEF-HALL: So I guess what I didn't understand was why the human factors or

discharges from other kinds of -- perhaps the water treatment plant in Sheridan, those kind of things weren't expressed in the percentage.

MR. OSBORNE: Nobody collects data on that. They're not required to use -- Municipal discharges don't have to sample for salinity, just other things like BOD.

MS. LINDLIEF-HALL: So they just were not comparable sorts of --

MR. OSBORNE: Someone would have to collect some data to find out.

MS. LINDLIEF-HALL: Then I did just have one more question. In the first part of your presentation, you were talking about the percentages I think of coal bed methane water that was -- or flows, and you had said that there was like 2.1 gallons per minute in 2009 that was discharged into the river -- I don't remember exactly which slide that was -- and then you said that 20.6 cubic feet per second total produced water was being discharged. And again, I'm wondering why gallons per minute for one and --

MR. OSBORNE: Just the difference in units?

MS. LINDLIEF-HALL: Yes, and how those

two would -- again, how they would correlate.

MR. OSBORNE: There was a unit change, so I think maybe what you're referring to is the average discharge per well in 2009 of -- All the coal bed natural gas wells in the basin was 3.1 gallons per minute, just because you can kind of relate it -- it's like garden hose flow perhaps. And then you total it all up, and I converted it to cubic feet per second, just so you could kind of get a -- it was more convenient units to compare with the flow of the river. So that's the only reason. But you could express it in gallons per minute as well.

MS. LINDLIEF-HALL: So would that be like impossible to do, like just right off the top of your head?

MR. OSBORNE: I think there's 448.8 gallons per minute per cubic feet per second. If you want to express it in a bigger number like gallons per minute, we can do it.

MS. LINDLIEF-HALL: Thank you.

CHAIRMAN TYLER: Questions for Tom.

MR. SALLEY: I'm not familiar with the mechanics of this coal bed thing, so these wells just discharge continuously, or is it stored and

released, or is it pumped to intervals? How does it enter the soil?

MR. OSBORNE: Generally once production of a coal bed natural gas well comes on line, it's produced -- both gas and water are produced continuously, as long as that well remains in production. The water -- The gas, of course, goes through a separate pipeline system to compression and to sale. The water also goes into a pipeline system, and then it goes to whatever water management facilities that particular operator has.

So in Wyoming where most of the wells are, a lot of the water is directed to impoundments where it's held. So a fraction of that water evaporates, a smaller fraction actually. The rest of it gradually seeps into the subsurface where it recharges the shallow groundwater system. And these are permitted facilities. They have to get permits from the Wyoming DEQ.

Some of the water that's produced will go maybe from an impoundment to a managed irrigation system, where it goes through a center pivot, or side rail system, that's managed

specifically for produced water. In some cases, they are also using subsurface drip irrigation systems where drip tapes are plowed into the soil, pressure emitters in the system vary regulated amounts of produced water is put into the subsurface, and they grow a crop over that as well and harvest it. So there is a number of -- In some cases it goes to some injection wells.

So each operator has a mix of management devices that they're using to handle that produced water. And it is one of the challenges of this particular type of operation, is that the continual production of that water has to be managed.

But it is also true that the amount of water being produced by coal bed natural gas is a lot less than people initially estimated back when the departmental impact studies were done before it got started in the early years. It got started in 1998, 1999, 2000. There was a lot higher projected. But the actual amount of water produced has not been that great.

CHAIRMAN TYLER: Tom, thank you so much. We've got --

MR. OLSON: Can I make a comment? My

name is Dave Olson with Fidelity. And to answer your question, the goal of a coal bed natural gas well is not to completely drain a coal seam. If you do that, you get an unreleased -- uncontrolled release of natural gas.

The goal is to get the water level in the coal seam at a certain level where you have a controlled release for this gas. And every well is unique, I should say, because they all have a different water level that you want to tweak the well to, to get to this water level, where you have a maximum release of natural gas. So they cycle on and off all the time. I hope that helps.

CHAIRMAN TYLER: Thank you. So on the agenda, we're not too far off. Karen was asking about it. Let's not short Rod who has a presentation on carcinogens, as well as the Prickley Pear irrigation ditch.

MR. McNEIL: I wanted to talk to you in January about this concept of the change in the carcinogen categorization scheme that EPA uses.

We've been moving along on modifications to DEQ7, and have a recommendation to make to the Council about the breaks in the scale for carcinogen use.

There is a body of information which the EPA uses called IRIS, Integrated Risk Information System. There is about 650 chemicals that are listed in there, with a great deal of clinical information about human toxicity. Just to kind of give you an idea, they've had 69,000 compounds submitted to IRIS for evaluation; and in 2005, they decided to change the manner in which they sorted information to determine whether it was appropriate for human risk assessment.

And so in 2009, they decided to instigate that new scale. And you guys have this, and so I'm just going to skip through some of this.

The problem is that this is the original scale as it's currently used in DEQ7. We made the break as defined in Footnote 2 right here, so everything above here was defined as a carcinogen; everything below as a toxin. Here is the new cancer classification scale. It has one more sector that it defines in this risk assessment.

And we have to go back and look at a lot of the classifications for all of the compounds in DEQ7, because not only did they begin using the new scale, they've kept the old scale. So we've

got two competing scales, so to speak, being used simultaneously.

And beginning in 2005, they went back through what's called the RED program, which is the Reregistration Eligibility Decision classification. Every compound that's in IRIS is reevaluated at least once every ten years, and in doing so, if the compound came after 2005, they used the new scale. So they didn't make the decision to use it until 2009, so there is a four year retrospective reclassification.

What we needed to do was to figure out where to break this new scale to allow us to utilize it in DEQ7, and there is differences in the risk factors associated between the two scales. So we can compensate for that mathematically. So the real question comes in: What do we want to consider as a cancer -- a carcinogenic risk?

So here is the scale, and where we're proposing to break it. So these four classifications would now be considered carcinogen, and these two would be considered toxic. The rationale for the decision to make the break there is the level of evidence necessary to

describe a compound as carcinogenic. It's a much more rigorous definition now than it was in 1984 when this scale was formed.

We have much better control of human studies, and epidemiology studies in particular, and so it seems to make sense to break the scale right here based on the new epidemiology rules, so this is what we're going to propose.

The outcome would be that the Footnote 2 would look like this, carcinogen including those parameters in classifications A, B-1, B-2, and C, or under new scale H, L, S,O, L/N. So everything else would be a toxin, and these would all be carcinogens. And I'm proposing also in addition, the column indicating category would be modified to describe the actual classification in parentheses, thereby defining which scale we're going to use.

So rather than just saying it's a carcinogen, if I say it's an "A," you know it was classified under the old scale; and you can go back and look at -- see that it was defined as a definite human carcinogen, as opposed to just saying it's a carcinogen, where it could fall anywhere in this range. So to make these

modifications to DEQ7 will require all of it to be rereviewed, so everything classified as a carcinogen or a toxin would have to be reviewed.

Here is an example of a compound that would change, Atrizine. Originally it was classified as a carcinogen, still is listed that way in the 2010 DEQ7. In the new listing proposal, it would be called toxic, under classification "N."

And there are a number of compounds that this has occurred for. There is about seven compounds that were listed as toxic that have become carcinogenic, and eleven toxins have now been reclassified as carcinogenic. So a lot of shifting around between the two scales between 2005 and 2009.

And we're going to propose to bring this as an action item along with the rest of DEQ7 to WPCAC for your approval in the future. My plan is to bring DEQ7 forward to you in May or June.

CHAIRMAN TYLER: You're not looking for action today?

MR. McNEIL: I'm not looking at action today. We'll do this as a package with DEQ7. Any questions?

CHAIRMAN TYLER: I do have question. Is this above or below the level? (indicating).

MR. McNEIL: I'm surprised you haven't died already.

CHAIRMAN TYLER: Thank you, Rod. So Prickly Pear, Helena Valley.

MR. McNEIL: We have a number of water bodies in the state of Montana that could be considered for reclassification. In order to carry out reclassification, we have to go through a process called "Use Attainability Analysis, or UAA's. And the City of Helena has asked us to consider reclassification of the Helena valley irrigation canal, and because of its proximity to Prickley Pear, then we'll talk about each of these.

This is what we're talking about here. This is the reservoir. This is the canal itself. Circles this portion of the city. This is Lake Helena here. These are part of the distribution system for water from the irrigation canal, and then these are return flows, these ones in purple are return flows from the irrigation canal, and they call those ditches. So we get to throw in the term "ditches" there.

So this is water right from the Missouri, goes into the holding reservoir from the Missouri, it's pumped in here, and then it's fed out by gravity flow all the way around, and the return flow goes back to Lake Helena.

A number of agencies have been studying the water quality in this area for some time, meaning EPA, the Lake Helena Watershed Monitoring Network Group, the DEQ, etc., and so we undertook a program in 2010 to begin monitoring to look at some specific issues that were not addressed in other studies, and in particular, to expand the biology within this area.

So the stars are the locations on the irrigation canal where we carried out our studies, and you'll notice that we have two stars located quite close together here. One of the reasons that the City of Helena was interested in having this evaluated was that they had a concept of diverting the flow from the City of Helena wastewater treatment plant directly into the canal, and then applying that nitrogenous load to the land, and thereby reducing the total load to Lake Helena; but to do that, they needed to know more about the water quality and classification,

appropriate classification.

So there were questions relative to the permitting that required that a UAA be carried out. So this is the point at which that diversion would take place into the canal. Currently, the Helena outfall to Prickly Pear Creek is right here, and the East Helena outfall in Prickley Pear Creek is right here. Both of those empty into Lake Helena.

Currently, all of the Helena valley irrigation canal system is classified as B-1. The question is: Is that an appropriate classification? The canal is drained annually, so we have a classification which has not been used, D-1, which reads, "Waters in constructed irrigation and drain ditches which contain control flows, and surface, and are dewatered during the non-irrigation season." It would appear that that would be the appropriate classification for the canal itself.

However, if you look at these return ditches, these intercept a great deal of groundwater flow, and so they discharge continuously year around. They're not dewatered. And so they will carry a different classification

than the main canal itself.

We've just gotten the last of the biological data from the studies that we did last year in the last two weeks, so we're busy trying to process all of this data, but wanted to familiarize you with the issues. So what we're looking at is one classification for the main canal and another classification for the return ditches.

The return ditches are currently classified B-1, and as I said, are controlled by groundwater. They have an existing year around fish population which includes salmonids. It has a B-1 classification, and will probably remain a B-1 classification.

Now, Prickley Pear is a different bag of worms, if you will. Prickly Pear is a creek that has six segments, two of which are defined as "I" class. "I" class is an older classification system that was developed about 40 years ago that addresses a wide variety of impairments, and so it was sort of a catch-all. Very few water bodies remain in the "I" class, and so as a matter of fact, there is only three water bodies left.

So there have been a lot of efforts over

the last ten to twenty years to improve water quality in Prickly Pear Creek, and so we wanted to do an evaluation of whether reclassification on the Prickley Pear was appropriate at this time.

CHAIRMAN TYLER: What are the three water bodies left?

MR. McNEIL: Muddy Creek, and Silver Bow, Butte Silver Bow.

CHAIRMAN TYLER: Where is Muddy Creek?

MR. McNEIL: That's in the Sun River drainage.

MS. NEUMAN: It comes off the Fairfield Bench.

MR. McNEIL: Here is our map. The two segments of Prickley Pear which extend down here towards Clancy are classified B-1. This segment here, from this location to here, is actually defined by the outfalls from the East Helena wastewater treatment plant and the City of Helena wastewater treatment plant. This is a Class "I" segment, and this is a Class "I" segment going all the way to Lake Helena. Then Lake Helena itself is a B-1 segment, and then the return to the Missouri, Lake Hauser, is a B-1 segment as well. So it goes B-1, B-1, I, I, B-1, B-1, in terms of

the sequence now.

There has been a lot of, particularly in the head waters in the region up in the B-1 sections, there are a number of impairments to this water body, mostly associated with mining, things like lead, arsenic, zinc, copper exceedences for aquatic life, and human health exceedences for lead and arsenic.

So what we're looking at is the collection of the data over the past about 30 years to look at trends, to see how much improvement there is in the Prickley Pear, and whether there is enough information to now justify reclassifying Prickley Pear's "I" class segments to some other water body classification.

Because some of the kinds of issues that we have to consider is the fact that the impairment relative to human health for arsenic is still sufficiently high that it would require unconventional treatment. So harm to use for the use as water body would probably remain regardless of what we reclassified it as. I think this is part of the Department's effort in the long run to reevaluate all of the "I" class segments, and to put them into more protective status if their

water chemistry and biology currently allows that to be done.

Timing on this, we plan to prepare the UAA evaluations for both the Helena valley irrigation canal and for Prickley Pear this year. I would expect to bring these to your committee probably in the October/November time frame. I believe you have a meeting in November.

So are there any questions on this?

MS. BUCKIN-SANCHEZ: I have a question specific to the East Helena wastewater treatment plant and their current MPDES permit. In their permit, they currently have some arsenic requirements that will go into effect I believe in a year or two.

If the receiving water was reclassified to B-1, would that then probably increase the treatment requirements in the next permit? I'm trying to --

MR. McNEIL: Jenny, please chime in if I say this wrong, but I believe I'm talking -- Jeff May -- that the loading measurements that were done were based on B-1 classification.

MS. CHAMBERS: That's correct. There is a Lake Helena TMDL, and the streams are listed as

impaired in Lake Helena, and so the point source discharges got the load allocation based upon the B-1 classification, Lake Helena, so levels had already been addressed in both East Helena and upcoming Helena permit renewal. So we're not anticipating that it would make any difference to those dischargers.

MS. BUCKIN-SANCHEZ: Thanks.

MR. SELCH: Rod, right now you're thinking if you did reclassify B-1, is what you're thing, of making the entire stretch --

MR. McNEIL: There is a couple of different ways to look at this. The number of legacy mines along Prickley Pear from the head waters down would be about 200 mine disturbances along -- so the logistics associated with, economic costs associated with complete restoration would be prohibitive, I think, and so more perhaps a more logical classification would be C-1 to remove drinking water use.

If we see salmonid support, some cuts in there, and throughout even impaired the Section C-1, so we certainly have the temperature regime in the head waters necessary to support cold water salmonids. So C-1 is a possibility.

MR. SELCH: So the entire thing would be reclassified? The B-1 would drop to C-1?

MR. McNEIL: That's the kind of thing we look at in a UAA. We could consider reclassifying all of the creek. That's considered removal of the use. So the standards for writing a UAA that removes the use are extremely stringent, and would take a pretty tall stack of data and rationale to justify removing the use.

That said, if that's the right thing to do, and we have the data to support it, that is the route we would take, is make all of the Prickley Pear C-1. The -- I guess I'll call it the path of least resistance would be making it B-1 to coincide with all the other existing sections that are already classified as B-1.

MR. SELCH: Is Ten Mile B-1 coming in there?

MR. McNEIL: Yes, it is.

MR. SELCH: All the way from the treat --

MR. McNEIL: Yes, I believe so.

CHAIRMAN TYLER: Questions?

(No response)

CHAIRMAN TYLER: Thank you, Rod.

So public comment period. Is there anybody here that wishes to address the Council?

MR. OLSON: Of course I do. Again, my name is Dave Olson with Fidelity Exploration and Production.

It was alluded to earlier that DEQ is allowing Fidelity to discharge untreated water to the Tongue River. That's not the case. We are treating 100 percent of our water to the Tongue River per our current effluent limits. So I wanted to make sure that everybody understands that.

The DEQ did grant an AOC, an Administrative Order on Consent, for two of our outfalls that have no infrastructure to get the treated water to these outfalls, and the goal is this summer during construction season to put the pipelines into those two outfalls to get treated water to the other two outfalls.

This AOC will allow us, if need be, to discharge untreated water to the Tongue River for a short period of time. We're hoping we don't need that, but it's a little insurance policy, if you will, for us.

And also, Roger you alluded to injection

well. Fidelity has looked at that. We're in the second year of a permit process to get a classified injection well permit from EPA, and we don't see any light at the end of the tunnel on that yet. We're still working through that. We've spent a lot of money, a lot of time, but they just won't seem to grant us that permit.

So those are my only comments. Thank you.

CHAIRMAN TYLER: Thank you.

MR. SMALL: My name is Ken Small. I'm a visitor. I'd just like to thank you for laboring in obscurity to make the last best place a better place, taking time from your family and your occupations, and things like that. I think you deserve a great deal of thanks, and you probably won't get it, except from me.

CHAIRMAN TYLER: Well, thank you, sir. Any other public comments?

(No response)

CHAIRMAN TYLER: Agenda items for next meeting. Agenda items, Bob and others.

MR. BUKANTIS: Well, I'm thinking Jenny is going to have another rule package next --

MS. CHAMBERS: Yes. Tom said we're

doing four rules, MPDES package. We cut this one package, first phase, in half. Otherwise the floor would have got 80, 90 pages, and we thought that was too big. It depends on how the BER goes. We've got that draft, and we may present that to you for action items, so we can keep going along with these MPDES phases. So yes, I may have a another rule package, action item to move forward.

CHAIRMAN TYLER: When is our next meeting?

MR. BUKANTIS: June 23rd. I think we might have -- we're thinking we're going to be up with the DEQ7?

MR. McNEIL: Yes. It's my intent to bring DEQ7 forward as an action item.

CHAIRMAN TYLER: That would be an action?

MR. BUKANTIS: Yes, assuming we're ready with that in time. Rod, you're feeling pretty good about that?

MR. McNEIL: Yes. We've got all of the reviews done based on this break in the carcinogen scale; we've got all of the RRD work done. The new pesticide values in the review are what we're waiting on now.

MR. BUKANTIS: Then the usual suspects for briefing items.

CHAIRMAN TYLER: The usual suspects. You've got a new one in back there. We want him back. I'm sorry, sir. I didn't remember your name.

MR. SMALL: Ken small.

CHAIRMAN TYLER: Thank you, Ken. So it sounds like we'll be here. Any other business, new or old?

(No response)

CHAIRMAN TYLER: Meeting adjourned. Thank you everybody.

(The proceedings were concluded at 2:48 p.m.)

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C E R T I F I C A T E

STATE OF MONTANA)
: SS.
COUNTY OF LEWIS & CLARK)

I, LAURIE CRUTCHER, RPR, Court Reporter, Notary Public in and for the County of Lewis & Clark, State of Montana, do hereby certify:

That the proceedings were taken before me at the time and place herein named; that the proceedings were reported by me in shorthand and transcribed using computer-aided transcription, and that the foregoing - 156 - pages contain a true record of the proceedings to the pesticide of my ability.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this _____ day of _____, 2011.

_____

LAURIE CRUTCHER, RPR
Court Reporter - Notary Public
My commission expires
March 9, 2012.

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